EXHIBIT 35

Legal Document

USPTO Patent Trial and Appeal Board
Case No. IPR2019-00899
Facebook, Inc. v. BlackBerry Limited

Document 1002

Declaration of Sandeep Chatterjee, Ph.D. in Support of
Petition for *Inter Partes* Review of
U.S. Patent No. 8,301,713 B2

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FACEBOOK, INC., INSTAGRAM, LLC and WHATSAPP INC.,
Petitioners

v.

BLACKBERRY LIMITED
Patent Owner

U.S. Patent No. 8,301,713 B2
Issue Date: October 30, 2012

Title: HANDHELD ELECTRONIC DEVICE AND ASSOCIATED METHOD PROVIDING TIME DATA IN A MESSAGING ENVIRONMENT

DECLARATION OF SANDEEP CHATTERJEE, PH.D.

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I, Sandeep Chatterjee, Ph.D., declare as follows:

I. INTRODUCTION AND QUALIFICATIONS

A. Qualifications and Experience

1. I am the Chief Executive Officer of Experantis LLC, a technology consulting company. I am also the Dean of the Mobility Center of Excellence at the International Institute of Digital Technologies. Previously, I was the Executive Vice President and Chief Technology Officer of SourceTrace Systems, Inc., a technology and services company enabling the delivery of secure remote electronic services over landline and wireless telecommunications networks.

2. I received my bachelor's degree in Electrical Engineering and Computer Science from the University of California, Berkeley in 1995. I received my master's degree in Computer Science from the Massachusetts Institute of Technology (MIT) in 1997, and my doctorate in Computer Science from MIT in 2001. I received a certificate of completion for an executive education program on global leadership from Harvard University in 2011. My doctoral dissertation at MIT, entitled "Composable System Resources for Networked Systems," which involved networked client architectures and systems, was selected as one of the top inventions in the history of MIT's Laboratory for Computer Science. This invention is showcased in a time capsule at the Museum of Science in Boston, Massachusetts.

3. In 2011, I was named a Young Global Leader. This honor, bestowed

each year by the World Economic Forum, recognizes and acknowledges the top leaders—all below the age of 40—from around the world for their professional accomplishments, commitment to society, and potential to contribute to shaping the future of the world. In 2016, I was appointed to the World Economic Forum's expert network as an expert in technology and innovation, and I advise world leaders on issues related to technology and innovation.

4. From 1997, I was the Entrepreneur-in-Residence at FidelityCAPITAL, the venture capital arm of Fidelity Investments. In 1999, I founded and served as President and Chief Technology Officer (CTO) of Satora Networks, which developed tools and technologies for building appliances and services for the Internet using wireless and other technologies to extend it beyond the desktop.

5. In 2001, I joined Bluestone Software's Mobile Middleware Labs as a Senior Engineer developing applications and systems infrastructure for enterprise Java/J2EE, Web services, and enterprise mobile solutions. After the completion of Hewlett-Packard's ("HP") acquisition of Bluestone, I became a Senior Member of the Technical Staff at HP's Middleware Division. I was responsible for architecting and developing the company's next-generation Web services platform for enterprise as well as mobile environments, known as the Web Services Mediator.

6. I was part of the Expert Group that developed the JSR-00172 J2ME

(Java 2 Platform, Micro Edition) Web Services Specification, the worldwide standard for mobile Web services. I am the co-author, with James Webber, of the book "Developing Enterprise Web Services: An Architect's Guide" (published by Prentice-Hall in 2004). This book has been adopted by over 100 universities and colleges around the world and has been translated or reprinted in numerous countries around the world.

7. I have extensive experience in architecting, developing, optimizing, deploying and managing complex computing systems, including mobile computing systems and messaging based systems, throughout the world. I have architected and developed mobile and distributed computing systems, including hardware and software for these systems. I have developed mobile messaging solutions that support different types of multimedia messages. As part of supporting multiple devices and form factors, I have extensive experience with a number of relevant technologies, including web technologies, and with the design and creation of client and server software, devices, and systems, as well as user interfaces that allow users to send, receive, access, and view content distributed on the web, including text and multimedia such as images.

8. I have been an invited speaker at conferences throughout the world, including the 2003 Automated Software Engineering Conference, the 2003 and 2004

International Multiconference in Computer Science & Computer Engineering, the 2004 IASTED International Conference on Software Engineering and Applications, and the 2004 IEEE International Conference on e-Technology, e-Commerce, and e-Service. I served as the General Chair for the 2004 International Symposium on Web Services and Applications. I also have served as a columnist on mobile and enterprise software systems for a number of IT magazines, including Java Boutique and Dataquest.

9. I have attached a more detailed list of my qualifications as **Exhibit A**.

10. Experantis is being compensated for my time working on this matter at my standard hourly rate plus expenses. Neither Experantis nor I have any personal or financial stake or interest in the outcome of the present proceeding, and the compensation is not dependent on the outcome of this IPR and in no way affects the substance of my statements in this Declaration.

B. Materials Considered

11. The analysis that I provide in this Declaration is based on my education and experience in the field of computer systems, as well as the documents I have considered, including U.S. Patent No. 8,301,713 B2 ("'713 patent") **[Ex. 1001]** and its prosecution history. The '713 patent states on its face that it issued from an application filed on May 19, 2011 and claims priority to provisional application filed

on September 19, 2003. For purposes of this Declaration, I have assumed September 19, 2003 as the effective filing date for the '713 patent. I have cited to the following documents in my analysis below:

Exhibit No.	Description of Document
1001	U.S. Patent No. 8,301,713 B2 to Gerhard D. Klassen et al. (filed May 19, 2011, issued Oct. 30, 2012) ("'713" or "'713 patent")
1003	U.S. Patent No. 7,366,779 B1 to James Crawford (filed Jun. 19, 2000, issued Apr. 29, 2008) ("Crawford")
1004	Excerpts from Jennifer Watson et al., *Your Official America Online Tour Guide* (6th ed. 2001) ("Watson")
1005	Excerpts from Jon C. Snader, *Effective TCP/IP Programming* (2000) ("Snader")
1006	Excerpts from W. Richard Stevens, *TCP/IP Illustrated, Volume 1* (1994) ("Stevens")
1007	"Socially Translucent Systems: Social Proxies, Persistent Conversation, and the Design of 'Babble,'" by Thomas Erickson, David N, Smith, Wendy A. Kellogg, Mark Laff, John T. Richards, Erin Bradner, CHI '99 Proceedings of the SIGCHI conference on Human Factors in Computing Systems, pp. 72-79 (May 15-20, 1999) ("Erickson")
1008	Julian Missig, "iChat Thought Bubbles" ("Missig") (excerpt of Ex. 1010)
1009	U.S. Patent App. Pub. No. 2004/0145608 A1 to Sean Fay et al. (filed Jan. 24, 2003, published Jul. 29, 2004) ("Fay")
1010	Affidavit of Christopher Butler, dated November 2, 2018 ("Butler affidavit")

Exhibit No.	Description of Document
1011	Post to mailing.gnome.announce newsgroup date September 23, 2002 by Christian Fredrik Kalager Schaller entitled "GNOME Summary for 2002-08-12 - 2002-08-16" ("Schaller")
1012	U.S Patent No. 6,944,555 B2 to Andrew W. Blackett et al. (filed Jun. 29, 2001, issued Sep. 13, 2005)
1013	U.S. Patent App. Pub. No. 2003/0018726 A1 to Sydney Gordon Low et al. (filed Apr. 29, 2002, published Jan. 23, 2003)
1014	International Patent App. Pub. No. WO 03/081460 A1 to Juha Kumpulainen (filed Mar. 26, 2002, published Oct. 2, 2003)
1015	Excerpts from *Microsoft Computer Dictionary* (5th ed. 2002)
1016	Excerpts from *Dictionary of Computer and Internet Words* (2001)
1017	Excerpts from Andrew Sheppard, *Skype Hacks* (2006) ("Sheppard")
1018	Web page source printout from the Internet Archive <https://web.archive.org/web/20030204074155fw_/http://missig.org/julian/jabber/iChat/>

II. PERSON OF ORDINARY SKILL IN THE ART

12. I understand that an assessment of claims of the '713 patent should be undertaken from the perspective of a person of ordinary skill in the art as of the earliest claimed priority date, which I understand is September 19, 2003. I have also been advised that to determine the appropriate level of a person having ordinary skill in the art, the following factors may be considered: (1) the types of problems encountered by those working in the field and prior art solutions thereto; (2) the

sophistication of the technology in question, and the rapidity with which innovations occur in the field; (3) the educational level of active workers in the field; and (4) the educational level of the inventor.

13. The '713 patent states that it "relates generally to handheld electronic devices and, more particularly, to a handheld electronic device and method for providing information representative of the times of certain communications in a messaging environment" ('713, 1:18-22), although the claims of the '713 patent do not require an electronic device that is "handheld" or that has any particular size or form.

14. In my opinion, a person of ordinary skill in the art as of September 2003 would have possessed at least a bachelor's degree in software engineering, computer science, computer engineering, or electrical engineering with at least two years of experience in software application development, including development of applications for messaging on mobile or wireless devices, such as development of associated user interface features and functionality (or equivalent degree or experience). A person could also have qualified as a person of ordinary skill in the art with some combination of (1) more formal education (such as a master's of science degree) and less technical experience or (2) less formal education and more technical or professional experience in the fields listed above. For example, acquired

as part of the person's basic computer education and/or experience, a person of ordinary skill in the art would have had a working knowledge about user interfaces for messaging systems, such as instant messaging systems. Such a person would also had had a working understanding of the underlying communications techniques and protocols used to transmit electronic messages over a communications network, such as the TCP/IP protocol used to send data over the Internet.

15. My opinions regarding the level of ordinary skill in the art are based on, among other things, my more than 20 years of experience in computer science, my understanding of the basic qualifications that would be relevant to an engineer or scientist tasked with investigating methods and systems in the relevant area, and my familiarity with the backgrounds of colleagues, co-workers, and employees, both past and present.

16. Although my qualifications and experience exceed those of the hypothetical person having ordinary skill in the art defined above, my analysis and opinions regarding the '713 patent have been based on the perspective of a person of ordinary skill in the art as of September 2003.

III. STATEMENT OF LEGAL PRINCIPLES

A. Claim Construction

17. I understand that under the legal principles, claim terms are generally given their ordinary and customary meaning, which is the meaning that the term

would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. I further understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which a claim term appears, but in the context of the entire patent, including the specification.

18. I am informed by counsel that the patent specification, under the legal principles, has been described as the single best guide to the meaning of a claim term, and is thus highly relevant to the interpretation of claim terms. And I understand for terms that do not have a customary meaning within the art, the specification usually supplies the best context of understanding the meaning of those terms.

19. I am further informed by counsel that other claims of the patent in question, both asserted and unasserted, can be valuable sources of information as to the meaning of a claim term. Because the claim terms are normally used consistently throughout the patent, the usage of a term in one claim an often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.

20. I understand that the prosecution history can further inform the meaning of the claim language by demonstrating how the inventors understood the invention

and whether the inventors limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be. Extrinsic evidence may also be consulted in construing the claim terms, such as my expert testimony.

21. I have been informed by counsel that, in *Inter Partes* Review (IPR) proceedings, a claim of a patent shall be construed using the same claim construction standard that would be used to construe the claim in a civil action filed in a U.S. district court (which I understand is called the "*Phillips*" claim construction standard), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

22. I have been instructed by counsel to apply the "*Phillips*" claim construction standard for purposes of interpreting the claims in this proceeding, to the extent they require an explicit construction. The description of the legal principles set forth above thus provides my understanding of the "*Phillips*" standard as provided to me by counsel.

IV. THE '713 PATENT

A. Overview of the Specification

23. The '713 patent, entitled "Handheld Electronic Device and Associated Method Providing Time Data in a Messaging Environment," states that it relates to "a method for providing information representative of the times of certain

communications in a messaging environment." ('713, 1:18-22.)

24. In the Background of the Invention, the specification acknowledges that electronic devices, such as wireless and handheld devices, were already capable of messaging—including "instant messaging" in which "a first device [] send[s] a message on a more or less instantaneous basis to a second device." ('713, 1:24-42.) The '713 patent asserts that it "would be desirable to provide an improved handheld electronic device and an associated method that provide time data in a messaging environment." ('713, 1:67-2:3.) An example of providing time data in a messaging environment that the patent asserts is "in accordance with an aspect of the method of the invention" is illustrated in Figures 4 and 5:

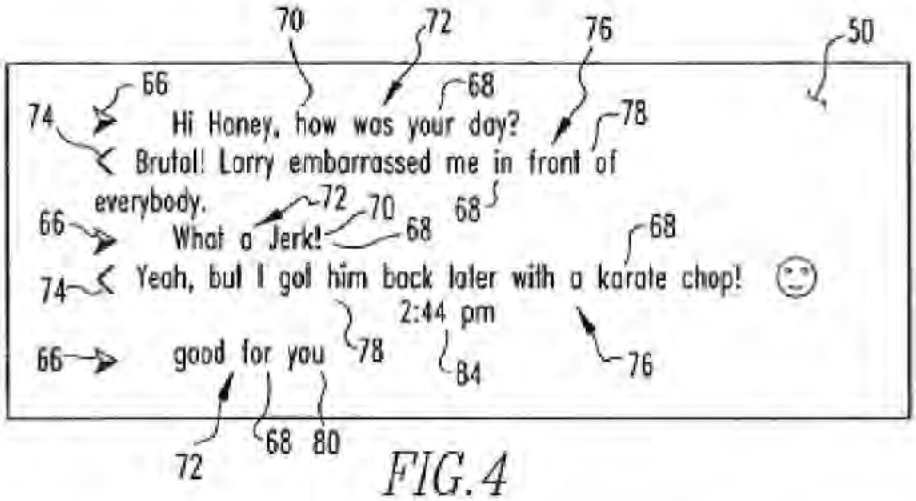

FIG. 4

('713, Fig. 4.) Referring to Figure 4, the '713 patent states that "[a] number of messages **68** are communicated between the devices **4** and **104**." ('713, 4:56-59.)

The messages include incoming message **72** that includes an incoming symbol **66** and text portion **70** ("Hi Honey, how was your day?"). ('713, 4:62-66.) The messages also include outgoing message **76** that includes an outgoing symbol **74** and text portion **78** ("Brutal! Larry embarrassed me in front of everybody."). ('713, 5:4-8.) The '713 patent states that if a message is not responded to before the expiration of a **predetermined duration of time**, the message is determined to be a "non-responded-to-message." ('713, 5:23-38.) In Figure 4, message **80**—"good for you"—is determined to be a non-responded-to-message. The '713 patent states that when new message is subsequently communicated between the devices, a timestamp is output next to the new message, as shown below in Figure 5:

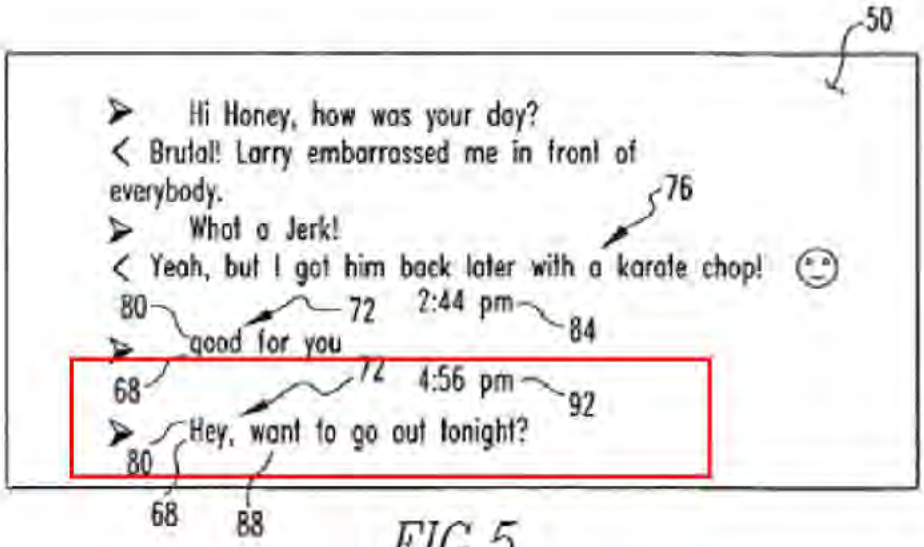

FIG. 5

('713, Fig. 5 (red box added).) The patent refers to such a message that resumes

communication after a period of interruption as a "resumption message." ('713, 5:62-6:2.)

25. The '713 patent notes that the "appearances of the various time stamps herein is completely exemplary, and that the time stamps could be provided in any format without departing from the concept of the invention." ('713, 7:34-37.) For example, Figure 8a, reproduced below, shows time stamp "2:44" and time stamp "4:56" output "at the beginnings **282** and **290** of the text portions of the non-responded-to message **280** and the resumption message **288**." ('713, 6:66-7:3.)

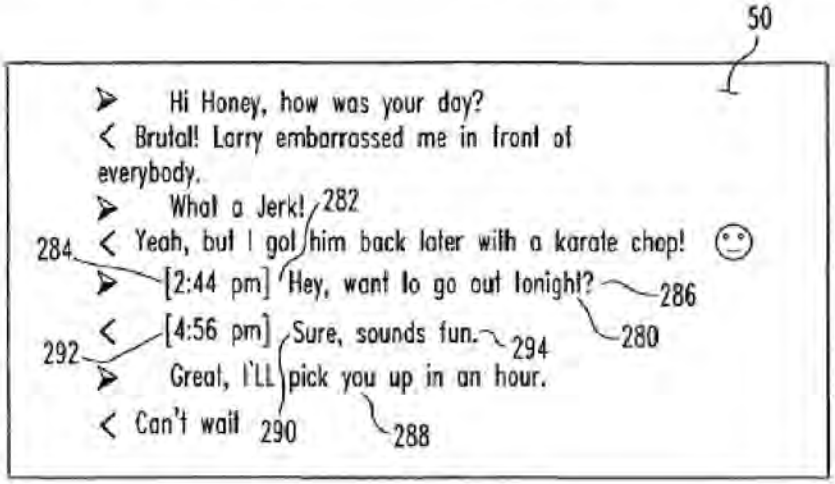

FIG.8a

('713, Fig. 8a.)

26. Although the examples above depict selectively presenting a timestamp after a predetermined duration of time has elapsed without communication, as I explain in more detail below, the claims do not recite such a restriction.

B. The Challenged Claims

27. This Declaration addresses claims 1-12 of the '713 patent. Claims 1, 5, and 9 are independent claims. Independent claim 1 and dependent claims 2-4 are representative. They recite:

1. A method of operating an electronic device, the method comprising:

[a] outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device;

[b] identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;

[c] determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;

[d] detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and

[e] responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time.

2. The method of claim **1**, wherein the input is a resumption message.

3. The method of claim **2**, further comprising outputting in the electronic conversation a second indication representative of at least a portion of the resumption message.

4. The method of claim **3**, wherein the time stamp is disposed between the first indication and the second indication.

('713, 8:48-9:10 (Claims 1-4).) Bracketed notations (*e.g.*, "**[a]**," "**[b]**," etc.) have been added to facilitate identification of the claim limitations in my analysis below. Claims 5-8 and 9-12 are substantially similar to claims 1-4 except that they recite a computer readable medium and electronic device, respectively, for performing the functions recited in claims 1-4. I will address each claim in **Part V** below.

V. APPLICATION OF THE PRIOR ART TO ASSERTED CLAIMS

28. I have reviewed and analyzed the prior art references and materials listed in **Part I.B** above. In my opinion, the claims of the '713 patent are rendered obvious based on the following prior art:

Ground	References	Claim(s)
1	Crawford (Ex. 1003), Watson (Ex. 1004), Stevens (Ex. 1006), Snader (Ex. 1005)	1-12
2	Crawford (Ex. 1003), Watson (Ex. 1004), Stevens (Ex. 1006),	4, 8, 12

Ground	References	Claim(s)
	Snader (Ex. 1005), Erickson (Ex. 1007)	
3	Crawford (Ex. 1003), Watson (Ex. 1004), Missig (Ex. 1008)	1-3, 5-7, 9-11
4	Crawford (Ex. 1003), Watson (Ex. 1004), Missig (Ex. 1008), Erickson (Ex. 1007)	4, 8, 12

29. As shown, Grounds 1-2 and Grounds 3-4 are similar with the exception of the prior art cited for step 1**[c]** of "**determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time**." Grounds 1-2 cite **Stevens** (Ex. 1006) and **Snader** (Ex. 1005) and explain that the claimed determination feature recites nothing more than well-known and standard functionality of TCP/IP networking of detecting whether a connection has been idle for a period of time. Grounds 3-4 cite **Missig** (Ex. 1008) for its description of an instant messaging timestamping feature; Missig specifically discloses outputting a timestamp in response to a new message following a gap in the conversation.

30. For the "**determining**" of step 1**[c]**, Grounds 1-2 rely on the fact that

the plain claim language does *not* require outputting a timestamp *only* for a message that is received after the predetermined duration of time elapses. Instead, the claim recites (1) determining that a predetermined duration of time has elapsed with no additional communication, (2) detecting an input after that determination, and then (3) outputting a timestamp in response to detecting the input. The challenged independent claims (all of which using the open-ended "comprising" transitional phrase) therefore do *not* preclude outputting a timestamp when an input is detected *before* the predetermined duration of time has elapsed. In fact, the claims do not place any restrictions on when other timestamps can be output. Ground 1—Crawford in view of Watson, Stevens, and Snader—discloses and renders obvious the independent claims under this broader interpretation.

31. However, to address the potential argument that the claims do require that a timestamp be output ***only*** in response to a new message received after the predetermined duration of time elapses, Ground 3 replaces Stevens and Snader with Missig. Missig discloses the claim even under this narrow view in which the timestamp must be selectively presented *only* after the predetermined duration of time has elapsed with no communication.

32. I am informed by counsel that each of the references cited in the grounds above qualifies as prior art to the challenged claims because each reference

was filed and/or published before the earliest filing date for the '713 patent.

A. Brief Summary of Prior Art

1. References Cited In Ground 1

(a) Crawford [Ex. 1003]

33. **Crawford**, U.S. Patent No. 7,366,779, entitled "Direct File Transfer Between Subscribers of Communications System," describes an instant messaging (IM) communications system with file transfer capability. (Crawford, Ex. 1003, 1:7-8.) The face page of Crawford identifies the assignee as AOL LLC (although I understand the patent is currently owned by Petitioner Facebook, Inc.). Crawford appears to disclose improvements to AOL's well-known instant messaging system, which was popular in the late 1990s and early 2000s. For example, Crawford states:

> America Online has provided subscribers with the ability to send and receive instant messages. Instant messages are private online conversations between two or more people who have subscribed to the instant messaging service and have installed the necessary software.

(Crawford, Ex. 1003, 1:25-29; *see also* Crawford, Ex. 1003, Figs. 10, 14, 16 (depicting graphical user interfaces visually similar to commercially-available AOL instant messenger client software).) I am informed that Crawford qualifies as prior art to the '713 patent because it issued from a patent application filed on June 19, 2000, which is before the earliest effective filing date for the '713 patent.

34. Each independent claim of the '713 patent recites an electronic device

that outputs an electronic conversation corresponding to communications between that device and a second device. (*E.g.*, '713, 8:50-54 (claim 1).) My analysis points to Crawford for disclosing these basic features of electronic communication.

35. More specifically, Crawford describes an instant messaging system in which electronic devices exchange communications and output them to users as part of an IM conversation. (Crawford, Ex. 1003, 4:39-44, 5:23-28.) An example conversation is depicted in Figure 16, which depicts a conversation between a first user named "HokieFanforLife" and a second user named "AIM Runningman":

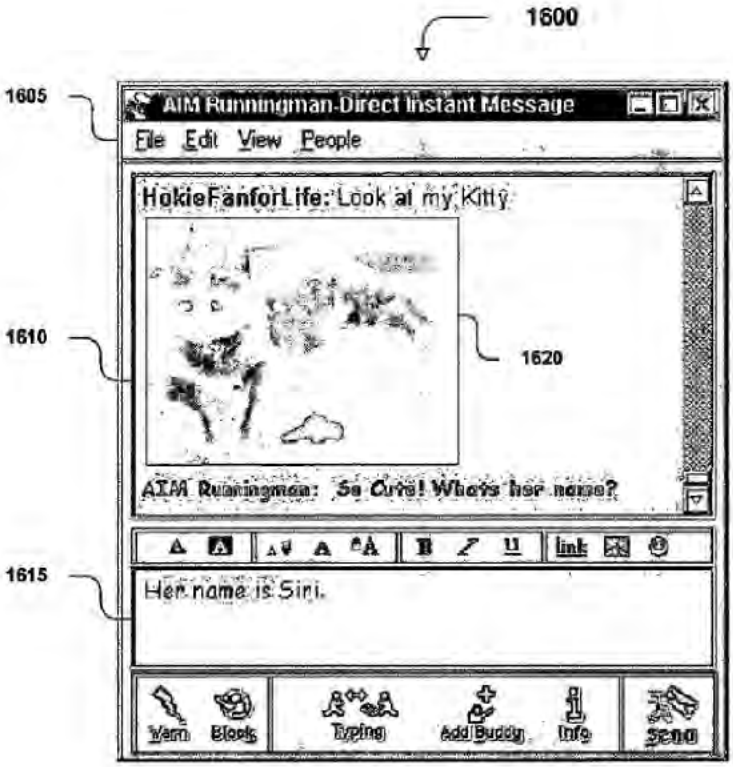

Fig. 16

(Crawford, Ex. 1003, Fig. 16.) HokieFanforLife's message includes the text "Look at my Kitty" and accompanying image **1620**, and AIM Runningman's reply message includes the text "So Cute! Whats her name?" (Crawford, Ex. 1003, Fig. 16.)

36. As it relates to the obviousness combination with **Stevens** and **Snader**, Crawford further discloses that communications are exchanged using an open network connection using the Transmission Control Protocol (TCP). (Crawford, Ex. 1003, 11:5-9 ("…client system to establish an open TCP connection to the IM server

5902."), 14:19-26 ("[client devices] communicate over an open connection, such as an open TCP connection established through the host **704**."), 15:64-16:17 (describing direct socket connection between client devices).) As I will explain in more detail in connection with Snader, "**TCP**" refers to the **Transmission Control Protocol** (TCP), one of the primary communications protocols for sending and receiving information over the Internet. TCP is often used with the Internet Protocol (IP), and the two are commonly referenced together as "TCP/IP." (*See Microsoft Computer Dictionary* (5th ed. 2002), Ex. 1015, p.513.)

37. For purposes of this Declaration and as explained in more detail below, one of the key features of TCP is the ability to establish a **TCP connection** between two endpoints on the network. Each endpoint in a TCP connection is known as a **socket**, which typically includes the IP address of the endpoint device and a port number that identifies the application to which the data received over the connection will be sent.

38. Crawford discloses the ability to establish a **direct socket connection** between the devices of two persons involved in an instant messaging conversation. (Crawford, Ex. 1003, 15:32-35 ("In one implementation, the client **702***b* attempts to establish a direct socket connection (e.g., a peer-to-peer socket connection) to the client **702***a* using the IP address of the client **702***a* (step **810**).").) This direct socket

connection allows each device to directly send to and receive from the other device without having to communicate through an intermediary host/server **704**. (Crawford, Ex. 1003, 16:7-8 ("The direct connection bypasses the connection between the client **702**a and the host **704**.").) The parties to the IM session can use this direct socket connection to transmit files and send additional messages to each other. (Crawford, Ex. 1003, 16:25-48.)

(b) Watson [Ex. 1004]

39. **Watson**, entitled *Your Official America Online Tour Guide* (6th ed. 2001), is a book published by AOL Press that describes features and functionality of the America Online service that was used by millions of people in the late 1990s and early 2000s. (Watson, Ex. 1004, p.7 ("We're delighted you've chosen to join us for your tour of the America Online Service"), p.7 ("By itself, the AOL service is a community of over 23 million members…"); *see generally id.*, pp.1-14.) I am informed that Watson qualifies as prior art to the '713 patent because it was published before the earliest effective filing date for the '713 patent.

40. Each independent claim recites the steps of "identify[ing] a first messaging communication … occurring at a first time" and "output[ting] … a time stamp representative of the second time." My analysis points to Watson in connection with these claim steps because Watson discloses outputting timestamps

in connection with sent or received instant messages.

41. Watson teaches a "timestamping feature that lets you see when your instant messages are sent or received." (Watson, Ex. 1004, p.147.) Watson explains that, with this feature, "the time appears to the right of your screen names in an instant message conversation." (Watson, Ex. 1004, p.147.) Figure 7-7 depicts an exemplary "instant message conversation with timestamps," showing the first message from Slkegigure at "3:10 PM" and a second message from Nervouseditor at "3:12 PM."

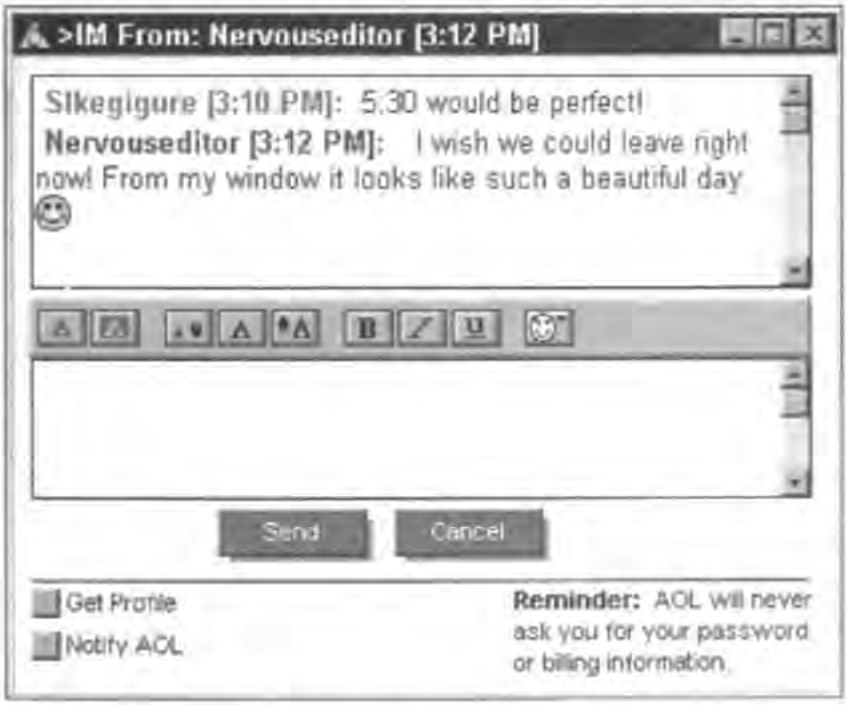

Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155.) Watson describes the timestamping feature as

"wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed." (Watson, Ex. 1004, p.155.)

42. Additional disclosures of Watson are discussed in my analysis of the claims below.

(c) Stevens [Ex. 1006]

43. **Stevens**, entitled *TCP/IP Illustrated, Volume 1*, is a textbook "intended for anyone wishing to understand how the TCP/IP protocols operate: programmers writing network applications, system administrators responsible for maintaining computer systems and networks utilizing TCP/IP, and users who deal with TCP/IP applications on a daily basis." (Stevens, Ex. 1006, p.xv.) I am informed that Stevens qualifies as prior art to the '713 patent because it was published before the earliest effective filing date for the '713 patent.

44. I have cited Stevens in combination with Snader (Ex. 1005) for purposes of the claimed feature of "determin[ing] that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time." As explained above, **Crawford** discloses the ability to create open TCP (Transmission Control Protocol) connections between devices involved in an instant messaging conversation. (Crawford, Ex. 1003, 11:5-9, 14:19-26, 15:64-16:17.) Stevens

confirms that these connections can remain open for extended periods with no information exchanged between the two devices:

> Many newcomers to TCP/IP are surprised to learn that no data whatsoever flows across an idle TCP connection. That is, if neither process at the ends of a TCP connection is sending data to the other, nothing is exchanged between the two TCP modules. There is no polling, for example, as you might find with other networking protocols. This means we can start a client process that establishes a TCP connection with a server, and walk away for hours, days, weeks or months, and the connection remains up.

(Stevens, Ex. 1006, §23.1, p.331 (underlining added).) In order to address this issue, Stevens discloses a technique known as the "**TCP keepalive timer**" in which one of the devices in the TCP connection times how long no traffic has flowed over the TCP connection. (Stevens, Ex. 1006, §23.2, p.332.) Stevens explains that the TCP keepalive timer can be implemented by either a server or a client, or by one or both sides of the connection. (Stevens, §23.2, p.332.) When the period of inactivity reaches a predetermined duration of time – two hours – a probe is sent to the other device to determine if the other device is still connected. (Stevens, §23.2, p.332 ("If there is no activity on a given connection for 2 hours, the server sends a probe segment to the client.").)

45. As I will explain below, the "determining" step recited in the claims of

the '713 patent is little more than a description of the well-known TCP keepalive timer disclosed in Stevens. It would have been obvious to adapt the instant messaging system described in Crawford such that one or both of the client devices involved in the conversation could implement a TCP keepalive timer to determine how long the TCP connection has been idle, *i.e.*, no instant messages have been sent or received as part of the conversation.

(d) Snader [Ex. 1005]

46. **Snader**, entitled *Effective TCP/IP Programming* (2000), is a book "written primarily for the advanced beginner or intermediate network programmer" that teaches computer programming using the TCP/IP networking protocol and "examine[s] common problems one at a time in a series of tips." (Snader, pp.xi-xii.) I am informed that Snader qualifies as prior art to the '713 patent because it was published before the earliest effective filing date for the '713 patent.

47. I cite Snader as complementary to the disclosures of Stevens regarding the TCP keepalive timer. Like Stevens, Snader describes the ability to detect that a connection between devices has been idle for a predefined duration of time. In fact, Snader cites to Stevens and specifically encourages people to read Stevens. (Snader, Ex. 1005, pp.264-66 ("Tip 41: Read Stevens").)

48. As noted, TCP refers to the Transmission Control Protocol for

transmitting data across a computer network. Snader explains that data transmitted using TCP is packaged into Internet Protocol ("IP") packets, and that the combination of TCP and IP is referred to as TCP/IP. (Snader, Ex. 1005, p.17 (explaining that TCP is "built on IP" and that "[t]hus, IP is the base on which the entire TCP/IP suite is built."), p.18 ("TCP sends its packets, called *segments*, in IP datagrams").) Snader explains that "[b]y the end of the 1990s, TCP/IP had become the dominant networking technology, and it is likely to remain so for some time." (Snader, Ex. 1005, p.1.)

49. Snader explains that TCP connections are established using "sockets." (Snader, Ex. 1005, p.7 ("SOCK_STREAM—These sockets provide a reliable, full duplex connection-oriented byte stream. In TCP/IP, this means *TCP*.") (underlining added), p.8 ("For the simplest TCP client, the only other sockets API call we need to set up a conversation with our peer is `connect`, which is used to establish the connection….Once we've set up a connection, we are ready to transfer data.").) Snader explains that "sockets" provide one of the main ways to carry out TCP/IP-based communications (including on computers running Microsoft Windows, via

the "Winsock API").[1] (Snader, Ex. 1005, p.47.)

50. Echoing the description provided by Stevens, Snader explains that once a TCP connection is established between two devices, the connection generally remains "open" until one of the devices closes the connection. (Snader, Ex. 1005, *e.g.*, p.16 ("The typical connection-oriented protocol has three phases. During the first phase, a connection is established between the peers. This is followed by the data transfer phase, during which data is transferred between the peers. Finally, when the peers have finished transferring data, the connection is torn down.").) But network connections between devices may be interrupted or terminated as a result of a network outage or one of the devices crashing. (Snader, Ex. 1005, p.77.) In those situations, the interruption or termination of the connection may not be discovered for a considerable amount of time and it perhaps may never be discovered. (Snader, p.77.) Snader explains that, to address this issue, one or more connected devices use a "keep alive" or "heartbeat" mechanism, where the devices will periodically check and ensure that a connection that has been idle (*i.e.*, no data

[1] The *Microsoft Computer Dictionary* (5th ed. 2002) explains that "Winsock" is short for "Windows Sockets" and is "[a]n application programming interface standard for software that provides a TCP/IP interface under Windows." (Ex 1015, p.572.)

transmitted) for a certain amount of time is still operational—i.e., "alive."

51. Snader further discloses that such a mechanism is actually part of the TCP – the TCP keepalive timer described by Stevens – but suggests that the TCP keepalive timer may not be useful to some applications because the TCP connection must be idle for at least two hours. (Snader, Ex. 1005, pp.79-80.) Snader further explains, though, that "[t]he problems with using keep-alives to monitor connectivity are easily solved by implementing a similar mechanism in the application," where the amount of time that a connection can be idle before the connection is checked is chosen based on the application's needs and type of network. (Snader, Ex. 1005, pp.80-81.) Snader provides an example of 60 seconds. (Snader, Ex. 1005, p.81 (referring to line 11 of sample source code, stating "[t]his constant defines the amount of time that the connection can be idle before the client sends a heartbeat to its peer. We have arbitrarily chosen 60 seconds, but a real application would have to choose a value based on its needs and on the type of network.").) As I explain below, it would have been obvious to a person of ordinary skill in the art to apply Snader's teachings regarding a "keep alive" or "heartbeat" mechanism to the instant messaging system of Crawford. This would have predictably resulted in the Crawford instant messaging system in which one or both client devices could detect a gap in the conversation after a predetermined amount of time, such as 60 seconds.

52. Additional disclosures of Snader are discussed in my analysis of the claims below.

2. References Cited in Grounds 2 and 4

53. Ground 2 and Ground 4 address dependent claims 4, 8, and 12, which recite that a time stamp "**disposed between the first indication and the second indication**." Ground 2 and Ground 4 thus rely on the same prior art and analysis as Grounds 1 and 2, respectively, but add the **Erickson** reference for the additional limitation recited in dependent claims 4, 8, and 12, to the extent those claims are interpreted narrowly as explained below.

(a) Erickson [Ex. 1007]

54. **Erickson**, entitled "Socially Translucent Systems: Social Proxies, Persistent Conversation, and the Design of 'Babble,'" is a paper authored by Thomas Erickson and others at IBM that describes a messaging software called "Babble" in which users exchange messages in chat-like conversations. (Erickson, Ex. 1007, p.75.) I am informed that Erickson qualifies as prior art to the '713 patent because it was published before the earliest effective filing date for the '713 patent.

55. Erickson describes a "functioning server and client system" that resembles a "combination of chat and bulletin boards." (Erickson, Ex. 1007, p.73.) Erickson explains that in the system, "once the text is composed, the user clicks a 'Done' button and the comment is appended to the end of the conversation, with a

name and time stamp." (Erickson, Ex. 1007, p.75 (underlining added).) An excerpt of Figure 3, showing a screenshot of a Babble conversation and timestamps, is shown below:

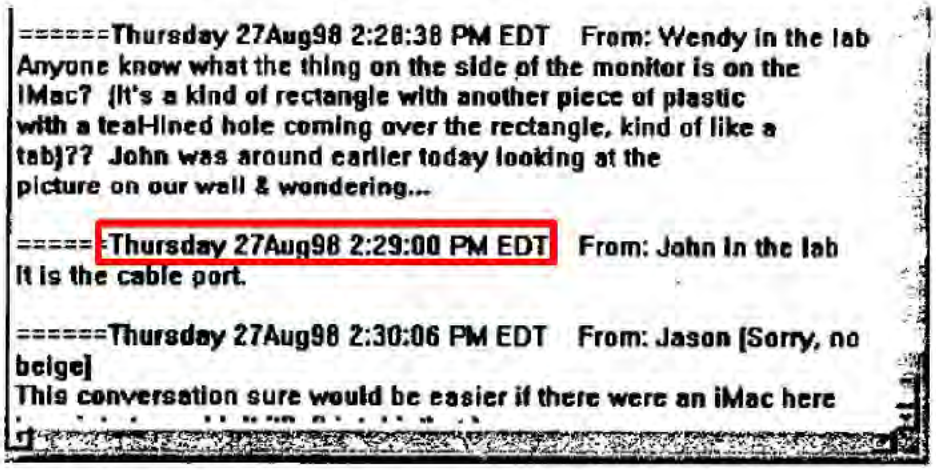

Figure 3. A screenshot of Babble. At the moment shown, all participants are in the same conversation (Commons

(Erickson, Ex. 1007, p.75, Fig. 3 (excerpt; red box added).) As shown above, the time stamp of "Thursday 27Aug98 2:29:00 PM EDT" is disposed between the content of two messages, one above from "Wendy in the lab" (*i.e.* "Anyone know what the thing on the side of the monitor is....") and one below from "John in the lab" (*i.e.* "It is the cable port."). Erickson further explains that "[b]y scanning the name and time stamp headers that precede each comment, the tempo of the conversation, the number of participants, and the presence or absence of frequent participants can be inferred." (Erickson, Ex. 1007, p.74; *see also id.*, Fig. 1 (showing time stamps of "Friday 12 Dec 97 3:44:49" and "Friday 12Dec 97 3:56:55").)

56. Additional disclosures of Erickson are discussed in my analysis of the claims below.

3. References Cited in Ground 3

57. As discussed previously, Ground 3 relies on Crawford and Watson from Ground 1, but cites Missig instead of Stevens and Snader for the determination recited in the independent claims, *e.g.* that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time.

(a) Missig [Ex. 1008]

58. **Missig** is a web page authored by Julian Missig, entitled *iChat Thought Bubbles*, retrieved from the Internet Archive. My analysis cites Missig as an alternative mapping in connection with the determining step identified above.

59. Missig purports to describe various features of the Apple iChat messaging software, and states that his page intends to help developers "improve" their systems based on the features of iChat. (*E.g.*, Missig, Ex. 1008, 001 ("This document is intended mainly for Jabber client developers (Gabber2 developers in particular) who either have not been fortunate enough to use iChat extensively or do not understand what exactly is so good about iChat. Apple has taken the initiative to release one of the most usable instant messaging clients to date—I would like to see Jabber's clients improve because of it.").)

60. One of the topics discussed by Missig relates to the placement of time stamps in messaging conversations. With reference to iChat, Missig states that [i]t's one of the least obtrustive [sic] uses of timestamps I've ever seen. They appear in small text centered at the top when the chat starts, and whenever there is a gap of about 5 minutes or so (I haven't determined the actual length) if a new message is sent, a new timestamp is printed." (Missig, Ex. 1008, at 002 (underlining added).)

Public Accessibility of Missig

61. I have been asked to provide my opinion on whether Missig can properly be considered prior art to the '713 patent. I am informed by counsel that, in order for a document to qualify as a prior art printed publication under the patent laws, the document has to have been disseminated or otherwise made available so persons of ordinary skill in the art, exercising reasonable diligence, could locate it. In my opinion, Missig satisfies this requirement.

62. I have reviewed the "Affidavit of Christopher Butler" from the Internet Archive, which I understand is being submitted as **Exhibit 1010** with the Petition for *Inter Partes* Review. I am generally familiar with the Internet Archive and have used it since at least 2004. As explained in Mr. Butler's affidavit, the Internet Archive includes a service known as the "Wayback Machine" that allows users to browse from more than 450 billion archived web pages. (*See* Butler Affidavit,

Ex. 1010, at 001, ¶3.) The Butler Affidavit attaches a copy of the Missig web page as an exhibit. (Ex. 1010 at 013-020.) This web page is shown with the following Uniform Resource Locator (URL) shown at the bottom of each page:

> "https://web.archive.org/web/20030204074155/http://missig.org:80/julian/jabber/iChat/"

Based on the URL encoding rules for the Internet Archive described in the Butler Affidavit, that URL indicates that the HTML on Missig was retrieved and archived by the Internet Archive at least by February 4, 2003 at 7:41 AM. (*See* Butler Affidavit, Ex. 1010, at 001, ¶5 (explaining how the digits in the URL indicate the date and time the page was archived).) This indicates that the Missig web page would have been publicly accessible through the Web by that date.[2]

63. Other web pages in the Butler Affidavit show that the persons of ordinary skill in the art, exercising reasonable diligence, could have located Missig. As noted above, Missig itself states that it "is intended mainly for Jabber client

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[2] The Butler Affidavit states that the date assigned by the Internet Archive as indicated in the URL "applies to the HTML file but not to image files linked therein." (Ex. 1010 at 001, ¶5.) This is presumably because linked image files have URLs that are separate from the URL for the HTML document. Because the content on which I rely from Missig is the HTML content, the February 4, 2003 applies.

developers (Gabber2 developers in particular)." (Missig, Ex. 1008, at 001.) Jabber was a popular instant messaging system in the late 1990s and early 2000s—in fact, I personally used Jabber in that timeframe, before the '713 patent priority date. For example, the Butler Affidavit also attaches a webpage from jabber.org entitled "Jabber::About" archived on February 1, 2003 at 8:10 AM,[3] which states that "Jabber services have been deployed at thousands of domains on the public Internet and on private intranets, and it is estimated that there are well over a million users of Jabber instant messaging services worldwide." (Ex. 1010 at 011.) Another jabber.org webpage, archived on February 6, 2003 at 9:18 PM,[4] discloses

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[3] Based on the URL encoding rules for the Internet Archive described in the Butler Affidavit, the URL "https://web.archive.org/web/20030201081005/http://www.jabber.org:80/about/overview.html" indicates that the HTML on the web page was accessible through the web at least by February 1, 2003 at 8:10 AM.

[4] Based on the URL encoding rules for the Internet Archive described in the Butler Affidavit, the URL: "https://web.archive.org/web/20030206211858/http://www.jabber.org:80/"

"Cumulative Project Stats (up through 2002-12-31)" that identifies 145,330 Jabber software ("Jabberd") downloads, 13,948 mailing list subscribers, and 76,537 mailing list posts." (Ex. 1010 at 022.)

64. I further note that a number of contemporaneous patents and patent applications also identify and discuss Jabber and jabber.org. For example, U.S. Patent No. 6,944,555 B2 to Andrew W. Blackett et al. (filed Jun. 29, 2001, issued Sep. 13, 2005) says: "Jabber operate[s] on an open Internet connection utilizing an open source protocol developed by www.jabber.org." (Ex. 1012, 30:41-43.) U.S. Patent App. Pub. No. 2003/0018726 A1 to Sydney Gordon Low et al. (filed Apr. 29, 2002, published Jan. 23, 2003) says: "[t]he IM client may be any one of a number of known IM clients, including AOL Instant Messenger (AIM), Yahoo! Messenger, MSN Messenger, ICQ, Bantu, Jabber, Everybuddy and Pow Wow. The protocols used by these clients are documented on the Internet at a number of locations, including … http://cvsweb.jabber.org …." (Ex. 1013, ¶35 (underlining added).) International Patent App. Pub. No. WO 03/081460 A1 to Juha Kumpulainen (filed Mar. 26, 2002, published Oct. 2, 2003) says: "Jabber IM server

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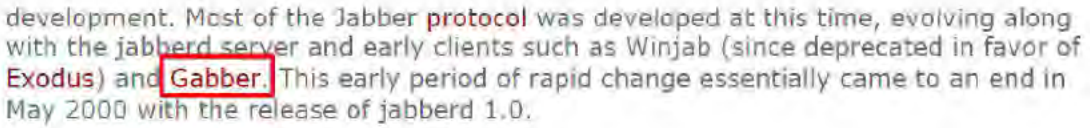
indicates that the HTML on the web page was accessible through the web at least by February 6, 2003 at 9:18 PM.

described in http://www.jabber.org can be used as an access point for instant messaging (IM) services." (Ex. 1014, 4:14-15.)

65. Webpages from jabber.org attached to the Butler affidavit discuss and point to Gabber software and webpages. For example, the "Jabber::About" webpage discussed above mentions and includes a hyperlink to Gabber:



(Ex. 1010 at 011 (red box added).) In addition, the Butler Affidavit also attaches a webpage entitled "Jabber Linux Clients" from jabber.org archived on February 5, 2003 at 6:05 AM[5] that identifies and includes a hyperlink to Gabber:

(Ex. 1010 at 021 (red box added).) The "Gabber" hyperlinks on both of these

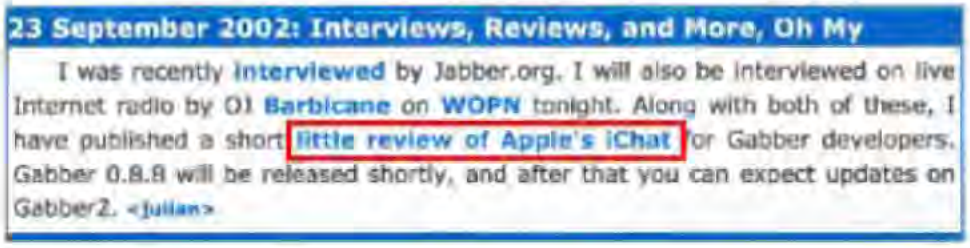
[5] Based on the URL encoding rules for the Internet Archive described in the Butler Affidavit, the URL:

"https://web.archive.org/web/20030205060513/http://www.jabber.org

:80/user/clientlist.php?Platform=Linux"

indicates that the HTML on the web page was accessible through the web at least by February 5, 2003 at 6:05 AM.

webpages point to a Gabber webpage that is also attached to the Butler affidavit and archived on February 16, 2003 at 2:43 PM.[6] The Gabber webpage states "I have published a short little review of Apple's iChat for Gabber developers":



23 September 2002: Interviews, Reviews, and More, Oh My

I was recently interviewed by Jabber.org. I will also be interviewed on live Internet radio by O1 Barbicane on WOPN tonight. Along with both of these, I have published a short little review of Apple's iChat for Gabber developers. Gabber 0.8.8 will be released shortly, and after that you can expect updates on Gabber2. <Julian>

(Ex. 1010 at 025 (red box added).) The hyperlink for the text, "little review of Apple's iChat," points to Missig.

66. I further note that, even without the hyperlinks connecting various Jabber and Gabber webpages to Missig, by 2003, Internet search engines such as Google, Alta Vista, and Yahoo! were available and capable of indexing web pages and retrieving them in response to simple keyword queries. I personally used these Internet search engines in that timeframe. Moreover, I was personally familiar with

[6] Based on the URL encoding rules for the Internet Archive described in the Butler Affidavit, the URL:

"https://web.archive.org/web/20030216144351/http://gabber.sourceforge.net/"

indicates that the HTML on the web page was accessible through the web at least by February 16, 2003 at 2:43 PM.

Gabber in this timeframe and know of others who used the software on their Linux-based computers.

67. In addition, I note that a message dated September 23, 2002 to the newsgroup "mailing.gnome.announce"[7] describes Missig and provides the URL to the web page:

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============================================================
1. The Future of Gabber
------------------------------------------------------------

GNOME has a long time has a client for the Jabber Instant messaging
system called Gabber. The development has been slow lately, but its
maintainer Julian Missig is now back in action. He has even put up a
nice article where he reviews Apple's iChat client for and tries to draw
lessons and ideas for use for his continued development of Gabber. An
interesting read for anyone using instant messaging clients under GNOME
or are developing such. Julian also did a interview recently with
jabber.org that you can read.

        http://missig.org/julian/jabber/iChat/
        http://www.jabber.org/people/interviews/x-virge.html
        http://gabber.sourceforge.net
```

(Ex. 1011 at 001 (excerpt; red box added).)

68. In light of all of the facts above, in my opinion, Missig was sufficiently available that persons of ordinary skill in the art could have located it with reasonable diligence.

[7] GNOME is a popular window-based graphical desktop environment for the Linux operating system.

C. Ground 1: Obviousness of Claims 1-12 Based on Crawford, Watson, Stevens and Snader

1. Claim 1

69. I have reproduced independent claim 1 below, and divided up the limitations using bracketed notations (*e.g.*, "[a]," "[b]," etc.) to facilitate identification of the limitations in my analysis below:

1. A method of operating an electronic device, the method comprising:

[a] outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device;

[b] identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;

[c] determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;

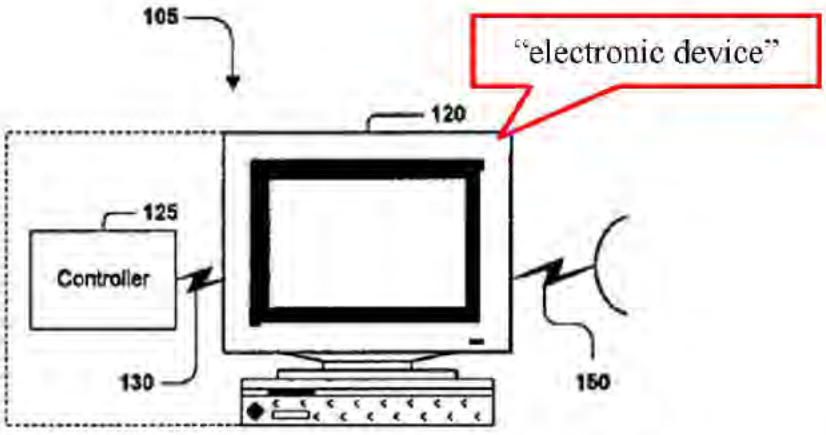
[d] detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and

[e] responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time.

('713, 8:48-9:3 (Claim 1).)

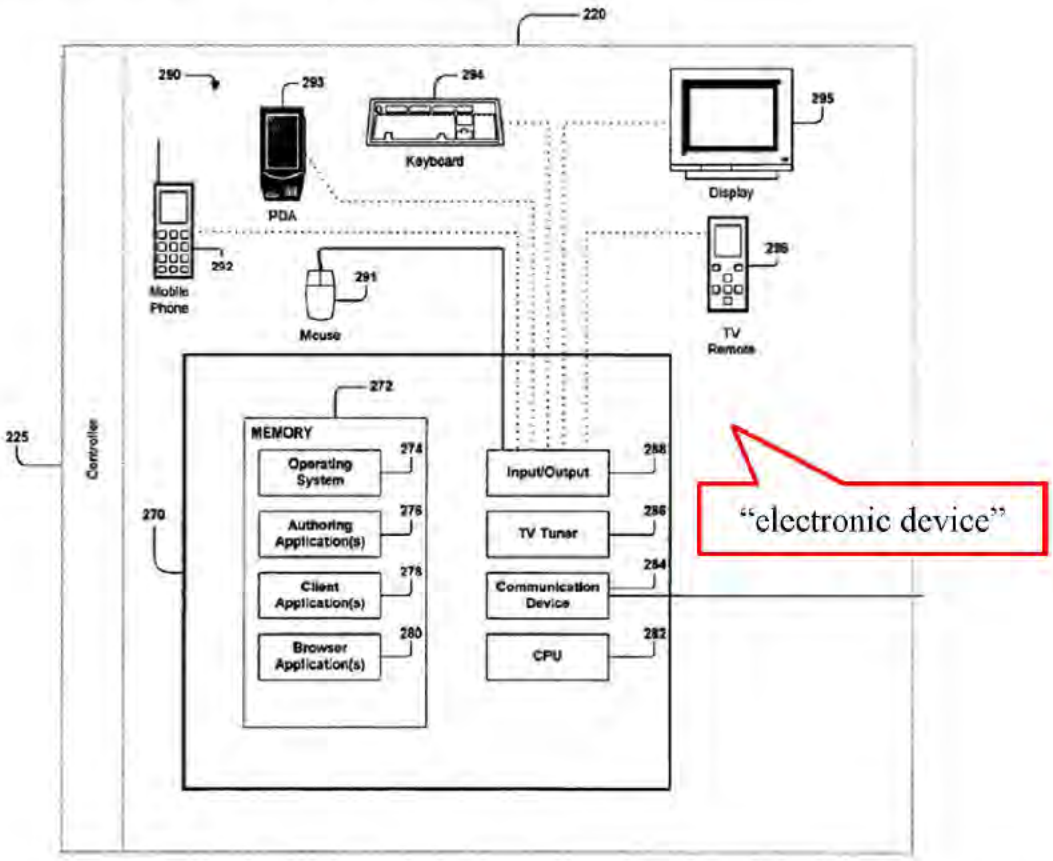
70. The preamble of claim 1 recites, "[a] method of operating an electronic device, the method comprising."

71. Crawford discloses the claimed "**electronic device**" in the form of a "client device," such as client device **120** and **220**. Crawford explains that an example of client device **120**, shown below in an excerpt from Figure 1, "is a general-purpose computer (e.g., a personal computer) capable of responding to and executing instructions in a defined manner":



(Crawford, Ex. 1003, 3:15-20, Fig. 1 (excerpt); *see also id.*, 3:20-23 ("Other examples include a special-purpose computer, a workstation, a server, a device, a component, other equipment or some combination thereof capable of responding to

and executing instructions.").) Figure 2, which is an "expansion[] of the block diagram of FIG. 1," depicts client device **220**:



(Crawford, Ex. 1003, Fig. 2 (excerpt).) Crawford explains that client device **220** "typically includes a general purpose computer **270**" but that other devices, such as mobile telephone **292** and PDA **293** may "include the functionality of the general-purpose computer **270** and operate as the client device **220**." (Crawford, Ex. 1003, 4:39-44, 5:23-28.) As explained in the analysis of the claim limitations that follow, Crawford discloses a number of techniques that enable the client device to establish

and conduct an instant messaging conversation. For example, Figure 16 of Crawford below discloses a screen display on a client device showing an ongoing instant messaging conversation between two users (*i.e.* "HokieFanforLife" and "AIM Runningman"):

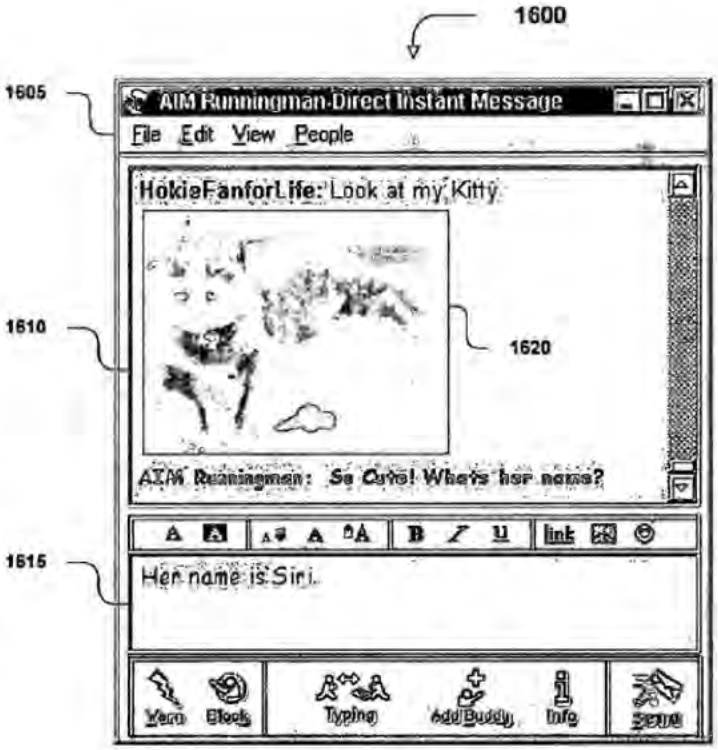


Fig. 16

(Crawford, Ex. 1003, Fig. 16.) Figure 16 shows a user interface displayed on the client device of "HokieFanforLife," who is engaged in an IM conversation with "AIM Runningman." For purposes of claim 1, the "**electronic device**" takes the form of the client device presenting the user interface display of Figure 16. As I

explain in detail for the following claim limitations, Crawford renders obvious the claimed **method of operating an electronic device**.

(a) "outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device" (Claim 1[a])

72. Crawford discloses this limitation in the form of an instant messaging (IM) conversation between the client devices of two users.

73. To start, Crawford explains that instant messages enable people to have an **electronic conversation**. (Crawford, Ex. 1003, 1:25-29 ("America Online has provided subscribers with the ability to send and receive instant messages. Instant messages are private online conversations between two or more people who have subscribed to the instant messaging service and have installed the necessary software.") (underlining added).) Figure 16 depicts an example of **outputting** an electronic conversation as claimed:

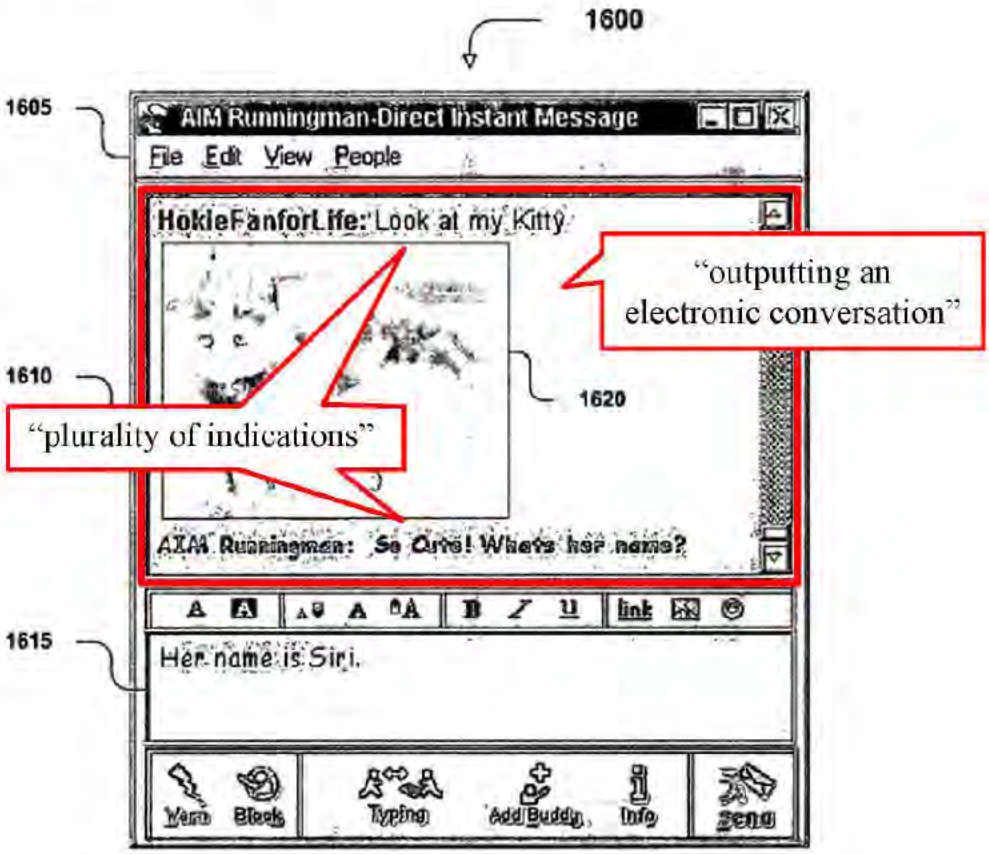


Fig. 16

(Crawford, Ex. 1003, Fig. 16 (red box and annotations added).) Figure 16 shows a conversation between a user named "HokieFanforLife" and "AIM Runningman" output in reading field **1610**:

> [A] UI **1600** includes a direct instant message box **1605**. The direct instant message box **1605** includes a reading field **1610** and a writing field **1615**. The reading field **1610** includes an image **1620**. In this example, a graphics file selected to be transferred is opened (i.e.,

displayed) in the direct instant message box **1605**.

(Crawford, Ex. 1003, 17:57-62 (underlining added).)

74. Crawford also discloses that an IM conversation comprises a **plurality of indications**. For example, as shown in Figure 16 above, the **plurality of indications** corresponds to the message text content exchanged between the two users. The first indication corresponds to HokieFanforLife's message that includes the text "Look at my Kitty" and accompanying image **1620**. The second indication corresponds to AIM Runningman's reply "So Cute! Whats her name?" (Crawford, Ex. 1003, Fig. 16.) Although only two messages appear in the reading field **1610** Figure 16, it would have been obvious to a person of ordinary skill in the art that many other messages could have appeared as part of this conversation. Figure 16, for example, shows writing field **1615** in which HokieFanforLife is composing another message (*i.e.* "Her name is Siri.") to be sent to AIM Runningman.

75. Crawford further discloses that **each** of these displayed messages (e.g., "Look at my Kitty") is **representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device**. In particular, Crawford explains that two client devices may establish a direct network connection with each other in order to carry out an instant messaging conversation. The two devices "typically have attributes comparable to

those described with respect to client devices **120**, **220**…" (Crawford, Ex. 1003, 13:62-66; *see also id.*, Fig. 8.)

76. Crawford explains that, to begin a direct connection, "the first subscriber enters the screen name of the second subscriber into the screen name box **1105**. Alternatively, if the second subscriber is on the first subscriber's buddy list, the first subscriber can open an instant message to the second subscriber and click on a direct transfer icon." (Crawford, Ex. 1003, 17:20-25; *see also id.*, Fig. 11 (reproduced at right).) Then, "the client **702***b* [of the second subscriber] attempts to establish a direct socket connection (e.g., a peer-to-peer socket connection) to the client **702***a* [of the first subscriber] using the IP address of the client **702***a* (step **810**)." (Crawford, Ex. 1003, 15:32-35; *see also id.*, Fig. 8.)

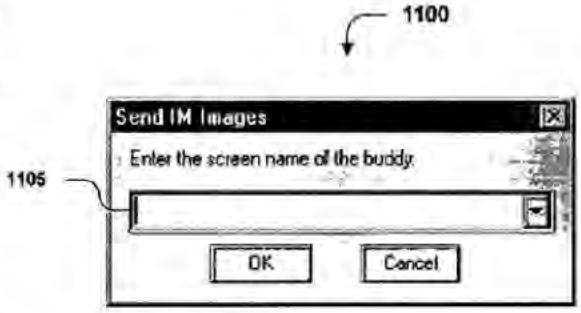


Fig. 11

77. The interaction between the two devices once the direct connection is established is depicted in Figure 9 of Crawford:

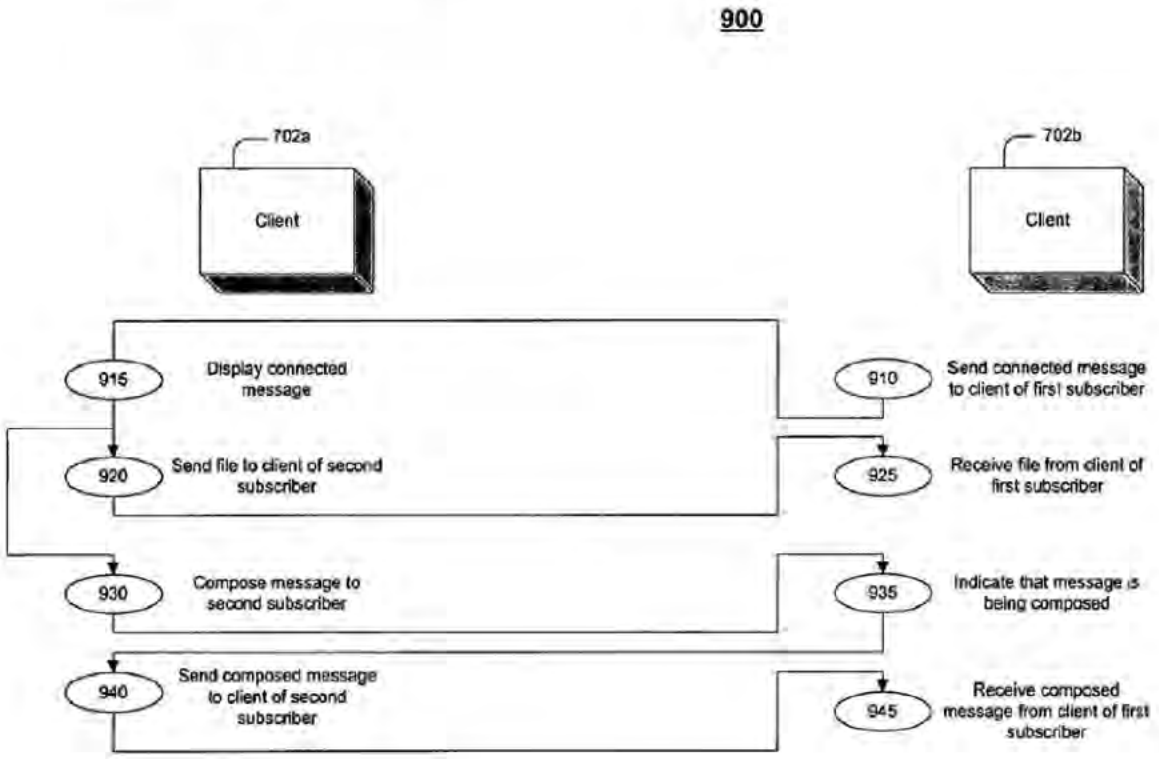


Fig. 9

(Crawford, Ex. 1003, Fig. 9.) As shown above, first, "[a]fter the connection is established, the client **702***b* sends a connected message to the client **702***a* of the first subscriber (step **910**)." (Crawford, Ex. 1003, 16:18-24.) The users of the two client devices may then exchange messages with each other using the direct connection (e.g., steps **920** and **940**). (Crawford, 16:39-44, 16:49-53; *see also id.*, 16:47-48 ("This will facilitate exchanges between subscribers and allow conversational communication.").)

78. Crawford discloses that Figure 16, discussed above, is an example of a

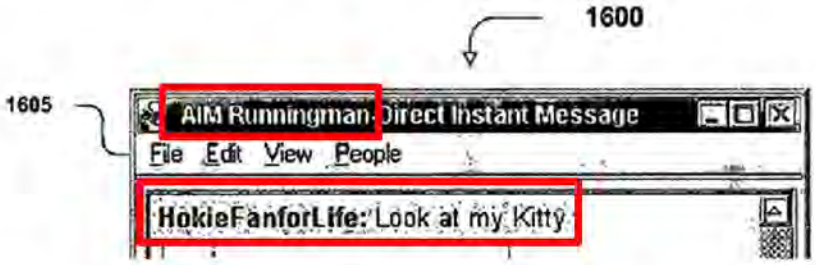
graphical user interface for a direct connection, explaining that "[A] UI **1600** includes a direct instant message box **1605**. The direct instant message box **1605** includes a reading field **1610** and a writing field **1615**." (Crawford, Ex. 1003, 17:57-59; *see also id.*, 17:42-51 (describing "direct instant message box **1405** presented to the receiving subscriber after the request to directly connect is accepted").) Therefore, Figure 16 illustrates the **claimed electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device**. In the case of Figure 16, the displayed messages (*e.g.*, "Look at my Kitty") are indications of messaging communications between the client devices of users "HokieFanforLife" and "AIM Runningman."

(b) "identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications" (Claim 1[b])

79. As explained below, this limitation would have been obvious to a person of ordinary skill in the art over Crawford in view of **Watson**. Because of the length of this limitation, my analysis addresses it in pieces.

"identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time,"

80. As shown above for claim 1[a], Crawford discloses **identifying messaging communications between electronic devices**, such as messages exchanged between the client devices of users "HokieFanforLife" and "AIM Runningman." For example, the exemplary graphical user interface of Figure 16 identifies the message "Look at my Kitty" as a communication that was transmitted from the device of "HokieFanforLife" to the device of "AIM Runningman":



(Crawford, Ex. 1003, Fig. 16 (excerpt; red boxes added).) Other examples in Crawford of identifying messaging communications include the reply of "AIM Runningman" to "HokieFanforLife," as well as the initial message sent between devices indicating that a direct connection has been established. (Crawford, Ex. 1003, Fig. 16, Fig. 9 (steps 910, 915 ("Display connected message"), 16:18-24 ("The client **702***a* receives the connected message and then displays the connected message to the first subscribers (step **915**).").) For purposes of this claim, "**a first messaging communication**" could take the form of the message from HokieFanforLife as shown in Figure 16.

81. A person of ordinary skill in the art would have further understood and found it obvious that each identified messaging communication in Crawford must **occur at a particular time**, regardless of whether or not that time is recorded. But Crawford does not appear to explicitly disclose any step of recording the time a message occurred, let alone displaying that time to the user. For example, Figure 16 of Crawford does not include a timestamp for each message that identifies when the message was sent or received. To the extent there is any question as to whether the messages in Crawford occur at a particular time, this limitation would have been obvious in further view of **Watson**.

82. As explained, Watson describes features and functionality of the America Online (AOL) service, including its instant messaging features. Watson explains that "AOL 6.0 introduces a new timestamping feature that lets you see when your instant messages are sent and received. After enabling timestamps in your instant message preferences, the time appears to the right of your screen names in an instant message conversation." (Watson, Ex. 1004, p.147 (underlining added).) Figure 7.7 of Watson provides an example of the timestamping feature:

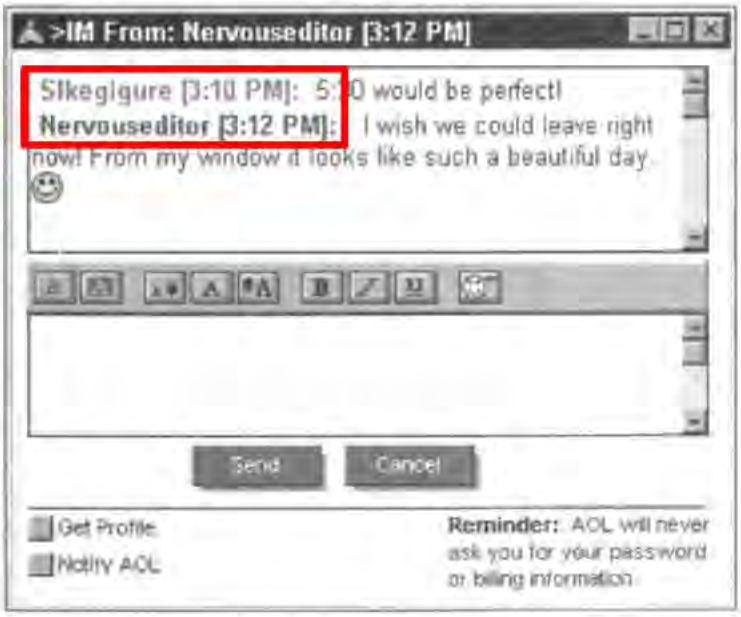


Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155 (red boxes added).) As shown in Figure 7-7 above, the displayed instant message conversation includes timestamps for each message exchanged, including a message from Slkegigure at 3:10 PM and a message from Nervouseditor at 3:12 PM. Watson explains that "[t]his information is wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed." (Watson, Ex. 1004, p.157.) Watson therefore discloses **identifying a first messaging communication occurring at a first time**.

83. I created the following figure, based on Figure 16 of Crawford, to visualize what the user interface of Crawford might look like if adapted, pursuant to the teachings of Watson, to output timestamps with each message:

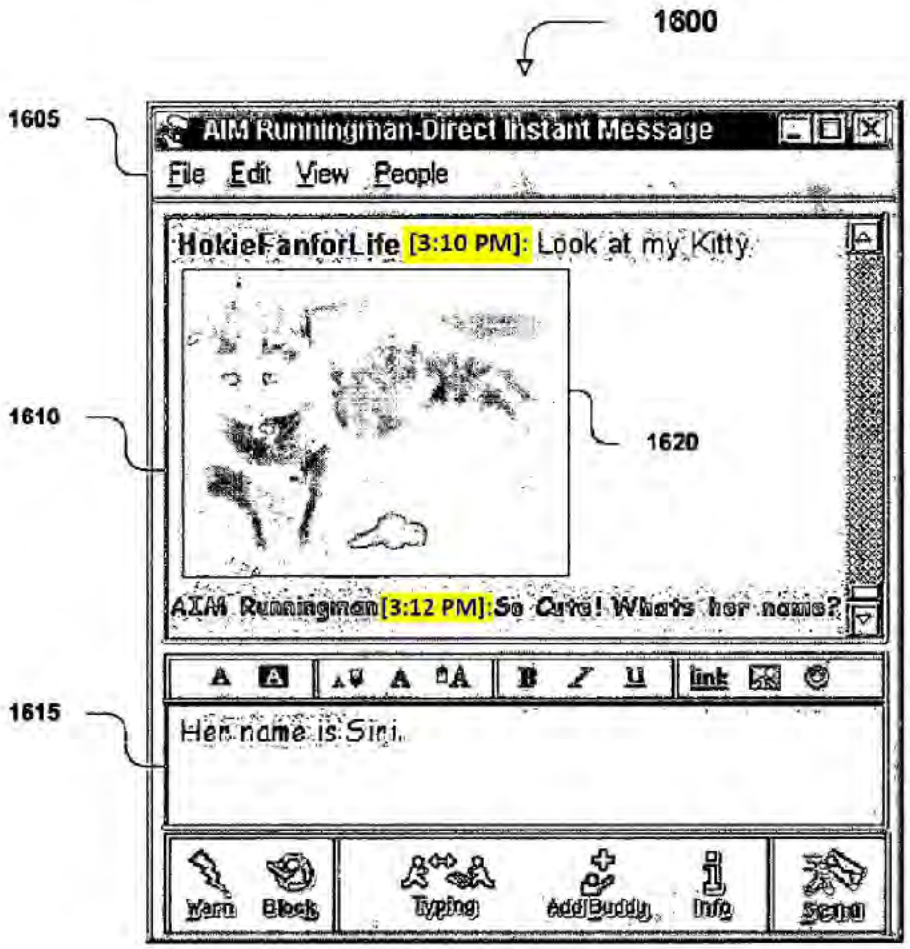


Fig. 16

(Crawford, Ex. 1003, Fig. 16 (highlighted timestamps added).) Crawford in view of Watson therefore renders obvious identifying a first messaging communication between the electronic device and the second electronic device *occurring at a first time*, as claimed. I will discuss the rationale and motivation to combine Crawford and Watson below, after addressing the other portion of this claim limitation.

84. I note that, for purposes of my analysis, I have identified the message from HokieFanforLife (at the top of Figure 16) as the claimed "**first messaging communication**," but any other message could be mapped to this limitation. For purposes of claim 1, the "first messaging communication" could take the form of the last message that occurred before a gap in the conversation and the step in claim 1**[c]** of determining that a predetermined duration of time has elapsed. As I explain below, a person of ordinary skill in the art would have understood, and found it obvious, that the IM conversations in Crawford could have been idle for extended periods of time as part of the ordinary course of the conversation. Therefore, the **first messaging communication** would take the form of the last communication that occurred before the IM conversation went idle for a duration of time equal to or longer than the predetermined duration of time.

"the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications"

85. I largely addressed this portion of claim 1[b] in my analysis of claim 1[a]. As explained, Figure 16 provides an example of the claimed **first indication representative of a first messaging communication**, such as the text and image from user "HokieFanforLife." Crawford discloses that this first indication corresponds to a **messaging communication** between the devices of users

"HokieFanForlife" and "AIM Runningman." (Crawford, Ex. 1003, e.g., 16:49-53 ("After the first subscriber has composed a message, the first subscriber sends the composed message to the client **702***b* of the second subscriber (step **940**). Using the client **702***b*, the second subscriber receives the composed message from the client **702***a* over the direct connection (step **945**)."), 1:25-29 ("Instant messages are private online conversations between two or more people who have subscribed to the instant messaging service and have installed the necessary software.").) Figure 16 further shows that the displayed message from "HokieFanforLife" is **one of the plurality of indications** discussed previously.

86. I note that, while I have used Figure 16 as an example in my analysis, a person of ordinary skill in the art would have understood that Crawford discloses generally the display of **indications corresponding to messaging communications** exchanged in a messaging conversation between devices of users. Therefore, as noted for the first part of this claim limitation, the claimed **corresponding first indication** generally would simply be the indication for the last communication that occurred before the IM conversation went idle for a duration of time equal to or longer than the predetermined duration of time.

87. ***Rationale and Motivation to Combine Crawford and Watson***. It would have been obvious to a person of ordinary skill to combine Crawford with the

timestamping feature disclosed in Watson. It would have involved only the combination of existing features according to their established functionality and would have predictably resulted in the display of instant messages in an instant messaging conversation where each displayed message included a timestamp identifying when the message was sent or received (*i.e.*, when the instant messaging communication occurred). For the convenience of the Board, I have reproduced the hypothetical mock-up that I created from above, showing Figure 16 of Crawford adapted to show message timestamps as disclosed in Watson:

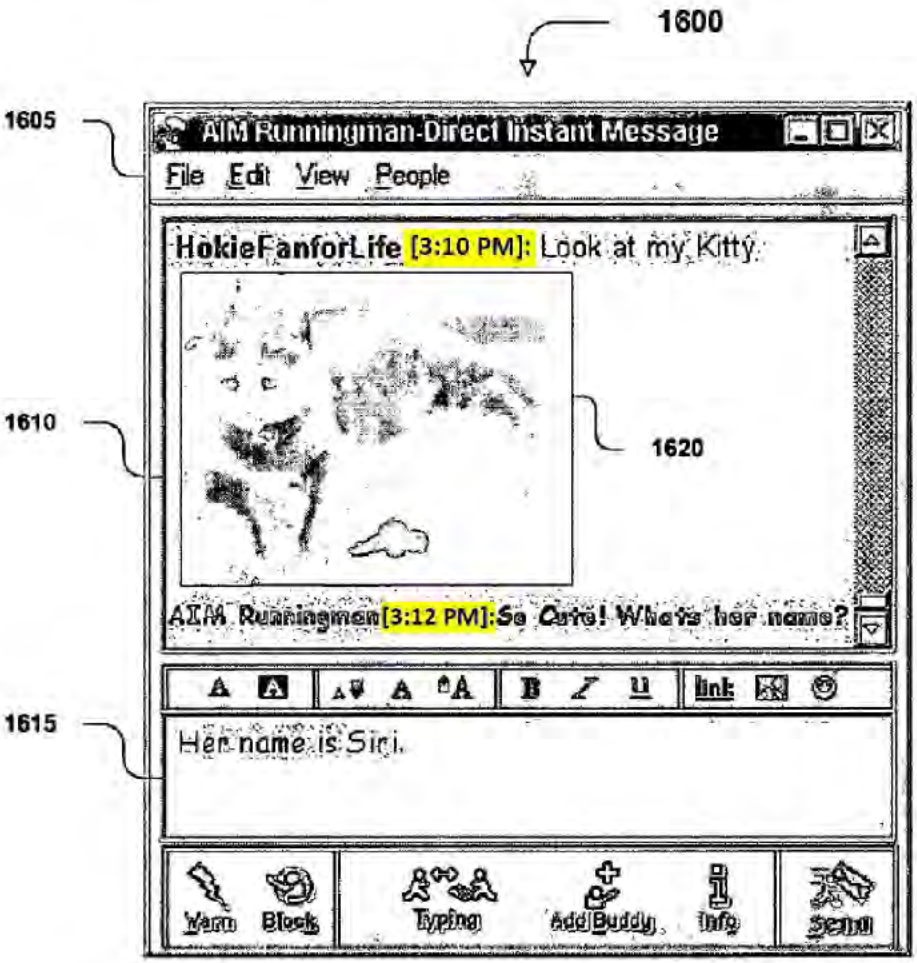


Fig. 16

(Crawford, Ex. 1003, Fig. 16 (highlighted timestamps added).) By including a timestamp with a displayed message, the combination of Crawford and Watson discloses the step of **identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time**. If one identified the message from HokieFanforLife as the "first messaging

communication," the "first time" would be 3:10 PM. And if the "first messaging communication" was the message from AIM Runningman, the "first time" is 3:12 PM.

88. A person of ordinary skill in the art would have a number of reasons to combine Crawford and Watson in this manner. To start, Crawford and Watson are analogous references in the field of computer-based messaging communications. In fact, as noted, they both describe aspects of AOL's instant messaging service. A person of ordinary skill in the art, seeking to implement or improve the system described in Crawford, would have naturally looked to a reference such as Watson for further implementation detail or beneficial features that could be advantageously included to improve the Crawford system.

89. Moreover, Watson provides express motivation for the combination. Watson describes the timestamping feature as a "useful tool" (Watson, Ex. 1004, p.154) that provides information that is "wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed" (Watson, Ex. 1004, p.155). A person of ordinary skill in the art would have recognized that the "useful" and "wonderful" timestamping feature was directly applicable to the instant messaging system described in Crawford and would have been motivated to include it to obtain the benefits and advantages identified in Watson.

90. Indeed, a person of ordinary skill in the art would have understood that knowing *when* instant messages were sent and received is often essential to knowing whether those communications are still relevant or require further action. This is particularly true given the exceedingly short (and sometimes cryptic) nature of instant messages, and the fact that users in 2003 commonly employed multiple means of communication. For example, suppose a user sends an instant message to a recipient asking a question, but before the recipient reads that message, the sender and recipient meet and speak in person. It is possible that the subject to which the instant message pertained will have already been dealt with during that in-person meeting. If the recipient later discovers and reviews the earlier message, knowing the timestamp would enable the recipient to immediately determine whether the message (1) raises an issue that the parties have since discussed (if the timestamp predates the meeting), or (2) poses follow-up questions or issues (if the timestamp postdates the meeting). As this simple example illustrates, there are a number of ways in which adding timestamps to messages allows users to more quickly discern the relevance of their incoming messages. Adding timestamps to messages also allows the client device to internally keep track of when communications occurred.

91. A person of ordinary skill in the art would also have had every expectation that the combination would have succeeded. The combination would

have required no more than routine programming techniques to determine when a message was sent or received and to display that information with the message. Moreover, as shown by Watson, such functionality had already been implemented in the commercially-available system that was the subject of Crawford's disclosure. The ability to obtain and display the currently time was a built-in feature of virtually every modern computer operating system. A person of ordinary skill in the art would have found adding the timestamp of Watson to the display of Crawford to have been trivially simple. Therefore, claim 1[b] would have been obvious to a person of ordinary over Crawford in view of Watson.

(c) "determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time" (Claim 1[c])

92. As explained below, this limitation would have been obvious to a person of ordinary skill in the art in view of **Stevens** and **Snader**. As an alternative, Grounds 3-4 substitute **Missig** in place of Stevens and Snader for this limitation.

93. Stevens and Snader confirm that claim 1[c] recites nothing more than basic TCP connection functionality that was well-known well before 2003. As explained previously, Crawford discloses an instant messaging system in which two clients can communicate with each other over using a TCP socket connection.

(Crawford, Ex. 1003, 11:5-9 ("open TCP connection"), 14:19-26 ("open connection, such as an open TCP connection"), 15:64-16:17 ("direct socket connection has been established").) Stevens and Snader confirm basic TCP functionality included known techniques when periods of inactivity took place during TCP connections. This functionality is sometimes referred to as "keep-alive" or "heartbeat" because it is used to periodically check and ensure that a connection that has been idle for a certain amount of time is still operational—i.e., "alive."

94. Stevens explains that TCP connections (such as the connections established between client devices in Crawford) can remain open for extended periods with no information exchanged between them:

> Many newcomers to TCP/IP are surprised to learn that no data whatsoever flows across an idle TCP connection. That is, if neither process at the ends of a TCP connection is sending data to the other, nothing is exchanged between the two TCP modules. There is no polling, for example, as you might find with other networking protocols. This means we can start a client process that establishes a TCP connection with a server, and walk away for hours, days, weeks or months, and the connection remains up.

(Stevens, Ex. 1006, §23.1, p.331 (underlining added).) In order to address this issue, Stevens discloses a technique known as the "**TCP keepalive timer**" in which one of the devices in the TCP connection times how long no traffic has flowed over the

TCP connection. (Stevens, Ex. 1006, §23.2, p.332.) Stevens explains that the TCP keepalive timer can be implemented by either a server or a client, or by one or both sides of the connection. (Stevens, §23.2, p.332.) When the period of inactivity reaches a predetermined duration of time – two hours – a probe is sent to the other device to determine if the other device is still connected. (Stevens, §23.2, p.332 ("If there is no activity on a given connection for 2 hours, the server sends a probe segment to the client.").)

95. Snader also discusses the TCP keepalive timer described in Stevens. Snader explains that "TCP, does in fact, have a mechanism, called *keep-alives*, for detecting dead connections," where TCP sends a probe to its peer when the connection has been idle (*i.e.*, no data transmitted) for a certain interval. (Snader, Ex. 1004, p.79.) Snader suggests that the basic TCP keepalive functionality may not be particularly useful for some applications because the network connection must be idle for at least 2 hours, which is too long to be useful for some applications. (Snader, Ex. 1004, pp.79-80.) Snader suggests a refinement to the TCP keepalive timer by "implementing a similar mechanism in the application," in which the amount of time that a connection must be idle can be set to shorter intervals. (Snader, Ex. 1004, pp.80-81.) Snader provides an example of 60 seconds, but explains that the number could be adjusted based on the needs of the application and the type of

network. (Snader, Ex. 1004, p.81 (referring to line 11 of sample source code, stating "[t]his constant defines the amount of time that the connection can be idle before the client sends a heartbeat to its peer. We have arbitrarily chosen 60 seconds, but a real application would have to choose a value based on its needs and on the type of network.").)

96. Therefore, the step of **determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time** simply describes the use of well-known functionality to detect an idle network connection between devices, *i.e.*, a connection in which no data has been sent or received for a predetermined duration of time.

97. ***Rationale and Motivation to Further Combine with Stevens and Snader***. It would have been obvious to a person of ordinary skill in the art to further combine Crawford and Watson with Stevens and Snader. The combination would have predictably resulted in the combined instant messaging system of Crawford and Watson (described above) in which a user's device could determine whether the connection with the other user's device has been idle for a predetermined duration of time, such as 60 seconds as suggested in Snader.

98. As noted, Stevens explains that "if neither process at the ends of a TCP

connection is sending data to the other, nothing is exchanged between the two TCP modules." (Stevens, Ex. 1006, §23.1, p.331.) A person of ordinary skill in the art would therefore have understood that an interval of inactivity in a TCP connection in Crawford (*e.g.* 60 seconds) means that no instant messages have been sent or received over that connection during that interval. The further combination with Stevens and Snader therefore renders obvious **determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time**, because the client in Crawford could have readily been adapted to detect a gap in the conversation of a predetermined duration of time, such as 60 seconds as suggested in Snader.[8]

[8] As explained previously, Stevens discusses the TCP keepalive timer in connection with a hypothetical interaction between a client and a server. (Stevens, Ex. 1006, §23.1, p.331.) But Stevens makes clear that a keepalive timer could be implemented by a client device, or by one or even both endpoints of the TCP connection. A person of ordinary skill in the art would have understood that the keepalive techniques in Stevens and Snader are agnostic to the "client" or "server" labels, and could have

99. I am informed by counsel that the Petitioner and Patent Owner currently disagree on the meaning of the phrase, "predetermined duration of time." I am informed that Petitioner asserts that it means "a length of time set in advance before the first messaging communication is sent," and Patent Owner asserts that it means "a duration of time determined based on computer programming that is implemented prior to the first messaging communication." It is not necessary for me to opine on this issue because, under either construction, the claimed "predetermined duration of time" is clearly disclosed and rendered obvious under my proposed combination. This is because the client device of Crawford would be adapted to detect an idle TCP connection used for instant messaging after a specified time period, such as 60 seconds as disclosed in Snader. Snader confirms that this duration would have been programmed directly into the source code of the client software itself (for example as a constant). (Snader, Ex. 1005, p.81 (referring to line 11 of sample source code, stating "[t]his constant defines the amount of time that the connection can be idle before the client sends a heartbeat to its peer. We have arbitrarily chosen 60 seconds, but a real application would have to choose a value based on its needs and on the

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been implemented by any TCP endpoint device. The technique could therefore also have been implemented between two client devices or two server devices.

type of network.").) It would have been obvious that, no matter what particular length of time was chosen, the duration disclosed in Snader would become an integral part of the part of the executable application running on the client device, *e.g.*, the client device in Crawford engaged in an instant messaging conversation. The "predetermined duration of time" would thus be determined both (1) before the first messaging communication, and (2) based on computer programming implemented prior to the first messaging communication (which would occur before the software launches and before any messaging conversation began).

100. Using the figure from below showing Figure 16 of Crawford adapted to include the timestamps of Watson, the "determining" step under the combination with Stevens and Snader would have occurred between the first and second message:

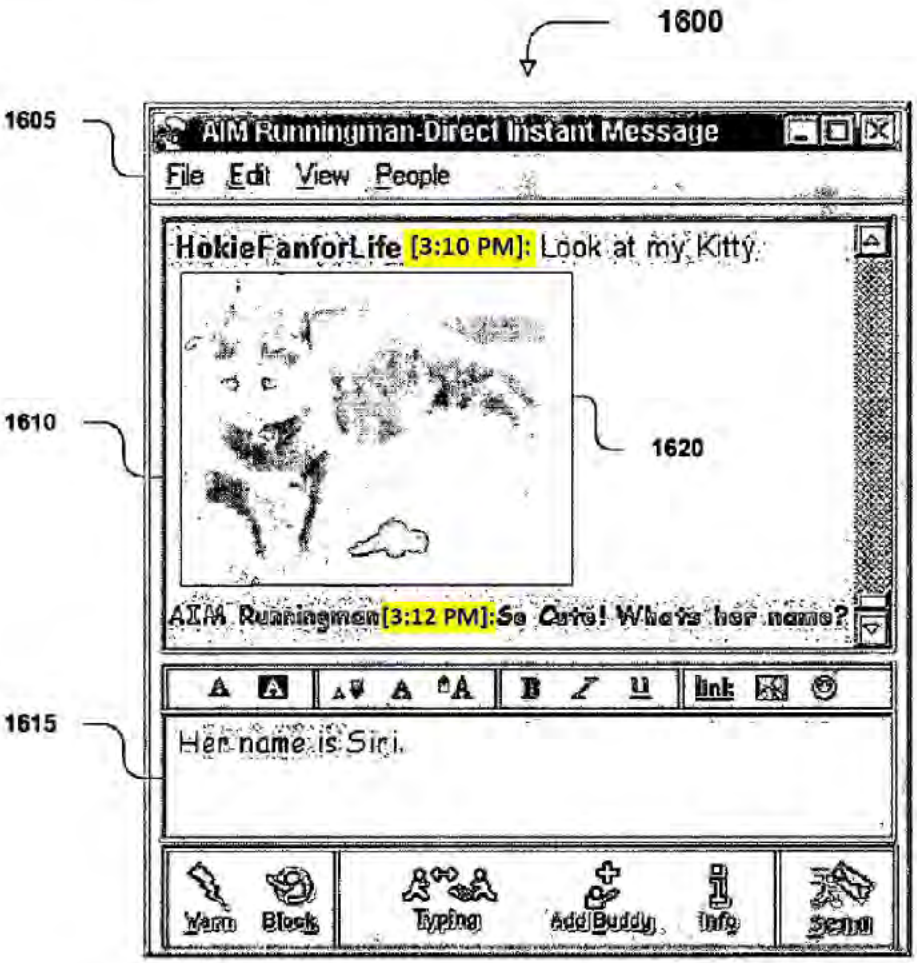

Fig. 16

(Crawford, Ex. 1003, Fig. 16 (highlighted timestamps added).) Under the proposed combination of Crawford and Watson with Stevens and Snader, the client in Crawford could have detected a gap in the conversation of 60 seconds between the first message (sent at 3:10 PM) and the second message (received at 3:12 PM). As this example illustrates, and just like an ordinary in-person conversation, pauses in

an IM conversation of 30 to 60 seconds (or longer) were known. (Watson, p.155 (describing timestamps as "wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed"; Fig. 7-7 (showing 2 minutes between messages at 3:10 PM and 3:12 PM); *see also* Fay, Ex. 1009, ¶0038 ("[I]t is well known that chats often occur with large time breaks between 'conversation.'").)

101. If a connection was found to be operational, no further action would need to be taken until the idle connection period elapsed once again. However, if a connection was no longer operational as a result of, for example, a network outage or the other device crashing, the lost connection could be reported in a timely manner in keeping with the real-time, conversational nature IM communication. (Crawford, Ex. 1003, 1:29-31 ("[S]uch online conversations take place in virtually real time."), 16:41-48 (describing "conversational communication").) The user or user's device could then take any appropriate action in response, such as attempt to reconnect or turn to other activities and continue the IM conversation at a later time. Without such functionality, a user could be left speculating for an unacceptable amount of time as to whether the other user had received a message or was still participating in the conversation.

102. A person of ordinary skill in the art would have had ample reason to combine Crawford and Watson with Stevens and Snader in this fashion. Crawford,

Watson, Stevens and Snader are analogous references in the field of electronic communications over computer networks such as the Internet. Crawford provides a brief description of network connections between devices, describing for example, an "open TCP connection" and using a device's IP address to establish a connection. (Crawford, Ex. 1003, *e.g.*, 2:7-9, 15:32-35, 11:2-9.) A person of ordinary skill in the art when seeking to implement or improve the system described in Crawford would have understood that Stevens and Snader pick up where Crawford leaves off with further detail about TCP connections and best practices for implementing network communication over those connections. In fact, Snader is subtitled is "44 Tips to Improve Your Network Programs," and the discussion of keep-alives is "Tip 10." (Snader, Ex. 1005, p.77.) With respect to Stevens, it provides valuable information about TCP connections that form some of the basic understanding of a person of ordinary skill in the art. A person of ordinary skill in the art would thus have found the disclosures of Stevens and Snader reasonably pertinent to a host of problems confronted by a skilled artisan seeking to implement the IM systems in Crawford and Watson. With respect to Stevens and Snader, the motivation to combine these could not be more straightforward – Snader directly cites to Stevens and specifically encourages people to read it. (Snader, Ex. 1005, pp.264-66 ("Tip 41: Read Stevens").)

103. In addition to disclosing keepalive functionality as a "tip," Snader provides further express motivation for the combination, admonishing the reader to "be prepared for rude behavior from a peer" and avoid the "temptation to dismiss the likelihood of some particular event as so remote that it is not worth dealing with in the application." (Snader, Ex. 1005, p.91.) Snader explains that "it is vitally important that we program defensively and try to anticipate every action that our peer may make, no matter how unlikely. We have already touched on this in Tip 9, when we discussed TCP failure modes, and in Tip 10, when we discussed detecting loss of connectivity." (Snader, Ex. 1005, p.91-92.) A person of ordinary skill in the art, reading Snader, would have therefore been strongly encouraged to implement the keep-alive functionality in the system of Crawford. And moreover, a person of ordinary skill in the art would have recognized that performing a check after a connection had been idle for 30 or 60 seconds would be consistent with Snader's recommendation to "choose a value based on [an application's] needs and on the type of network," given the real-time conversational nature of IM communications. (Snader, Ex. 1005, p.81.)

104. For all of these reasons, a person of ordinary skill in the art would have been motivated to adapt the instant message system of Crawford to detect whether the TCP connection between the two devices has been idle or inactive for a specified

period of time. As Snader confirms, this would have allowed a client to determine whether the idleness of the connection was attributable to a lack of communications in the IM conversation, or a disruption in the actual communication link between the devices. In the latter case, as noted, a client could attempt to reestablish the connection notify the user of the problem.

105. I observe that the motivation to combine described in Snader does not relate specifically to detecting breaks in instant messaging conversations – it instead relates more broadly to lack of activity in TCP socket connections. Nevertheless, I am informed by counsel that under the patent laws, a person of ordinary skill in the art need not be motivated to combine a prior art reference for the same reasons contemplated by the inventors. The benefits of detecting idle/inactive connections, as disclosed in Stevens and Snader, provide ample motivation to combine.

106. As noted, a person of ordinary skill in the art would have had every expectation of success. Crawford, Stevens, and Snader describe routine and conventional features and techniques in network programming, including socket connections that pre-date the '713 patent by decades. The ability to create and monitor TCP socket connections was a built-in feature of most operating systems as of 2003, which had application programming interfaces (APIs) – such as the Winsock API mentioned in Crawford – allowing programmers to easily implement

socket connections. (Crawford, Ex. 1003, 11:5-9, 14:19-25.)

(d) "detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and" (Claim 1[d])

107. This limitation simply corresponds to a user device of Crawford receiving a second instant message (or detecting a command to send the user's own message) after the "keep-alive" technique in Snader determined that the TCP connection was idle/inactive for the specified predetermined period of time (*e.g.* 60 seconds as disclosed in Snader). As noted, a person of ordinary skill in the art would have understood, and found it obvious, that a connection for an IM conversation could routinely be idle for 60 seconds or more. For example, Figure 7-7 of Watson shows a two-minute gap between messages:

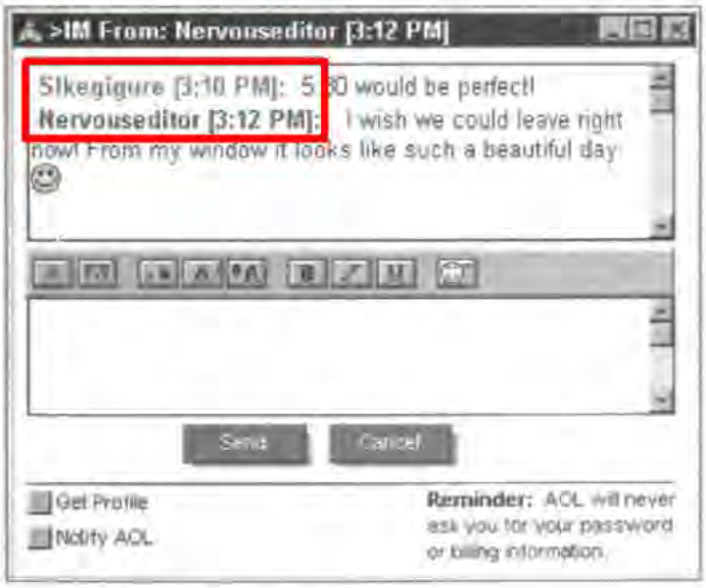

Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155 (red box added).) Fay similarly discloses that "[I]t is well known that chats often occur with large time breaks between 'conversation.'" (Fay, Ex. 1009, ¶0038.) As noted, adapting the timestamps of Watson to Crawford could have been appeared as follows:

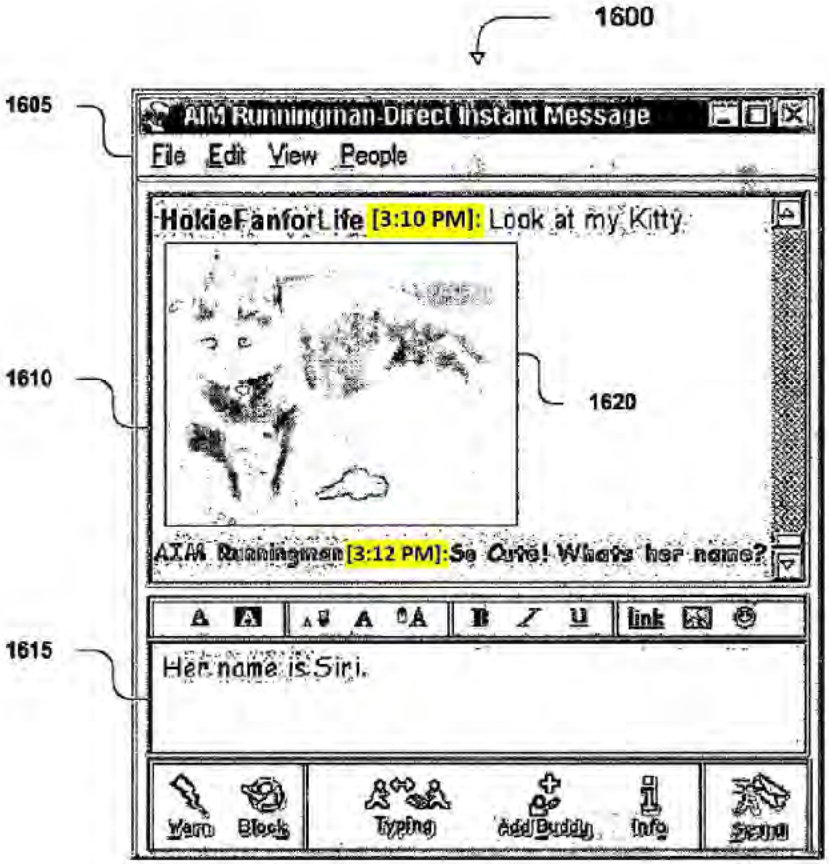

Fig. 16

(Crawford, Ex. 1003, Fig. 16 (highlighted timestamps added).) In this case, the

"**input to the electronic device following said identifying and determining steps**" could take the form of a second message sent after a period of inactivity, *e.g.*, the message from AIM Runningman at 3:12PM under the combination with Watson.

(e) "responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time." (Claim 1[e])

108. The final limitation is disclosed by and obvious over Crawford and Watson. As explained, **Crawford** discloses the claimed electronic conversation, and as discussed above, it would have been obvious in view of **Watson** to output a timestamp with a message in the conversation, where the timestamp represented the time that the message was sent or received. (Watson, Ex. 1004, p.155 ("Now when you send and receive messages, the time is displayed to the right of the screen name, as shown in Figure 7.7."), p.147 ("AOL 6.0 introduces a new timestamping feature that lets you see when your instant messages are sent and received.").) This was shown in the exemplary figure above, in which the timestamp of "3:12PM" was output in response to detecting a new message sent by AIM Runningman.

109. Therefore, by displaying a timestamp with the newly sent or received message in the IM conversation, Crawford and Watson disclose the step of **responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time**.

110. I note that the combination of Crawford and Watson discloses displaying a timestamp with *every message*. This is not an obstacle to finding obviousness based on the combination that I have described in **Ground 1**. As I explained previously, the plain language of the claim does *not* require outputting a timestamp *only* for a message that is received after the predetermined duration of time elapses. Instead, the claim recites (1) determining that a predetermined duration of time has elapsed, (2) detecting an input after that determination, and (3) outputting a timestamp in response to detecting the input. The claim therefore does *not* preclude outputting a timestamp when an input is detected before the predetermined duration of time has elapsed.

2. Claim 2

111. Claim 2 depends from claim 1 and further recites "**wherein the input is a resumption message**." As explained below, Watson discloses the additional limitations of claim 2. Accordingly, like claim 1, claim 2 is disclosed by and would have been obvious over Crawford, Watson, Stevens, and Snader.

112. I understand that the parties have agreed that a "**resumption message**" is a "**message after a period of interruption**." This is consistent with the specification of the '713 patent, which states that "[s]ince the message **68** corresponds with a resumption of communication between the devices **4** and **104**

after a period of interruption, the message **68** is determined to be a resumption message **88**." ('713, 5:64-67.) For purposes of the combination of Crawford and Watson, the "**resumption message**" could take the form of the message from AIM Runningman associated the "3:12PM" timestamp.

113. As noted, a person of ordinary skill in the art would have understood, and found it obvious, a message may be input after a period of interruption. For example, Watson describes timestamps as being "wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed" and Fay acknowledges that "it is well known that chats often occur with large time breaks between 'conversation.'" (Watson, Ex. 1004, p.157 (underlining added); Fay, Ex. 1009, ¶0038.)

3. Claim 3

114. Claim 3 depends from claim 2 and further recites "**outputting in the electronic conversation a second indication representative of at least a portion of the resumption message**."

115. I largely addressed claim 3 in my analysis of claims 1 and 2. As explained, Crawford and Watson disclose and render obvious outputting messages with timestamps in an instant messaging conversation, including a message input after a period of interruption (i.e., "resumption message"). Accordingly, Claim 3 is

also disclosed by and would have been obvious over Crawford, Watson, Stevens, and Snader.

4. Claim 4

116. Claim 4 depends from claim 3 and further recites "**wherein the time stamp is disposed between the first indication and the second indication**." This limitation is rendered obvious by Crawford and Watson. As explained in connection with claim 1, the combination of Crawford and Watson would have predictably resulted in the instant message user interface of Crawford with the addition of the timestamps of Watson. Figure 7-7 of Watson, as explained, shows how its timestamps can be presented:

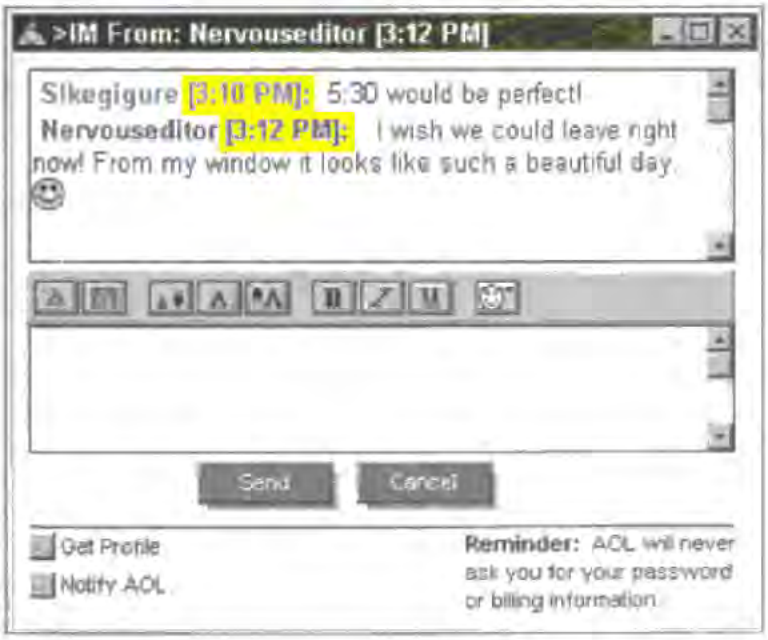

Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155 (highlighting added).) As explained for claim 1, adapting the instant message application of Crawford to those timestamps could have produced (for example) the following screen display:

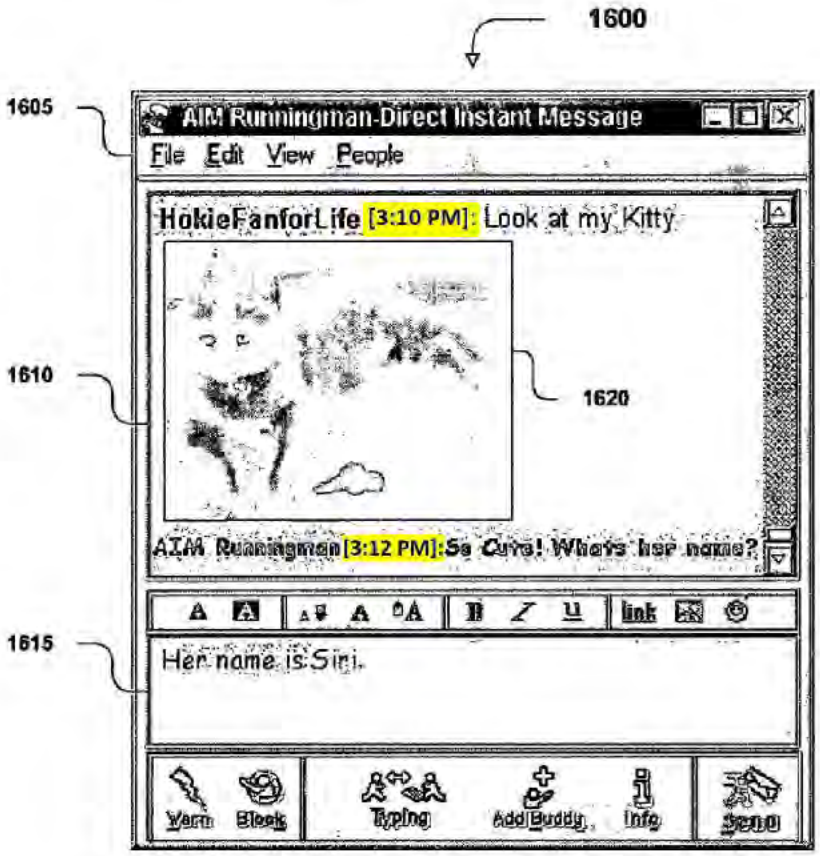

Fig. 16

(Crawford, Ex. 1003, Fig. 16 (highlighted timestamps added).) The figure above reflects the addition of the timestamps from Watson (below) placed in the instant messaging screen of Crawford. The combination of Watson and Crawford discloses

and renders obvious disposing the time stamp (*i.e.* "[3:12 PM]:") "**between the first indication and the second indication**." This is because the timestamp (*i.e.* "[3:12 PM]:") in the Crawford/Watson combination appears after the "**first indication**" in Crawford (*i.e.* "Look at my Kitty" as shown in Figure 16) but before the "**second indication**" (*i.e.* So Cute! Whats her name?").

117. I note that Figure 16 of Crawford shows only two exemplary messages having been send and/or received and the composition of a third messages (*i.e.* "Her name is Siri."). Nevertheless, it would also have been obvious that, for any two successive messages in Crawford that one identifies as the "first indication" and the "second indication," a time stamp will be disposed between them.

118. Finally, I note that there is some ambiguity as to whether the term "**disposed between**" in claim 4 requires placement of the timestamp in a vertical position different from the "**first indication**" and the "**second indication**," such as time stamp **92** shown in Figure 5:

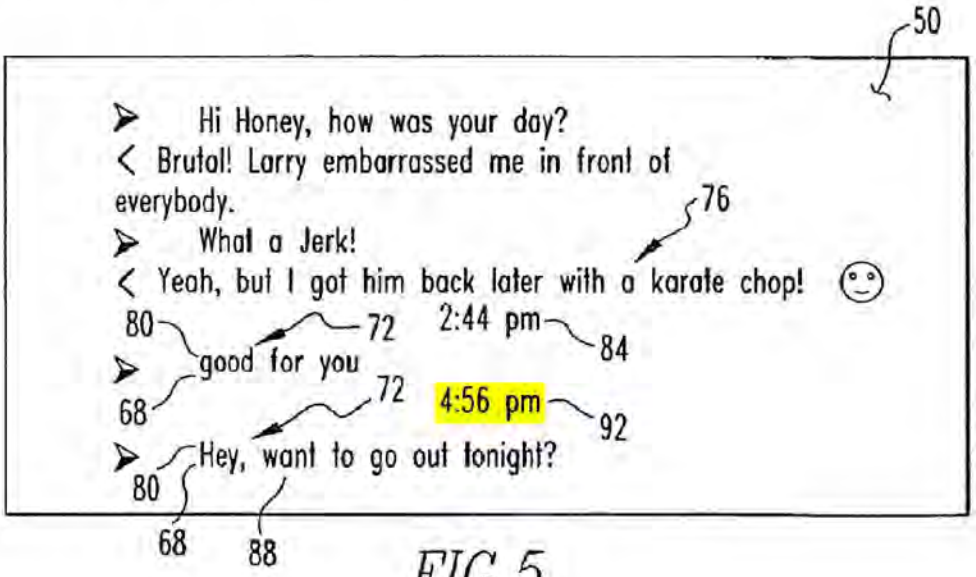

FIG. 5

('713, Fig. 5 (highlighting added), 5:64-6:13.) Although Figure 5 shows time stamp **92** sandwiched vertically between two messages, I see nothing in the claim requiring this type of physical arrangement. In my opinion, therefore, the placement of the time stamp in the Crawford and Watson combination (*i.e.* after a first message and on the same line but before the start of the second message) satisfies the claim. In the event it is argued that the claim requires a vertical separation, I have addressed this possibility in my discussion of Grounds 2 and 4.

5. Claim 5

119. As shown in the table below, independent claim 5 recites the "non-transitory computer readable medium" counterpart to the "method" of independent claim 1 (underlining added to indicate identical language):

Claim 1	Claim 5
1. A method of operating an electronic device, the method comprising:	5. A non-transitory computer readable medium comprising computer executable instructions embedded thereon for execution by a processor of an electronic device such that, when executed, cause the processor to:
outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device;	output an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device;
identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;	identify a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;
determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;	determine that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;
detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and	detect an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and

Claim 1	Claim 5
responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time.	responsive to said detecting an input, output in the electronic conversation, a time stamp representative of the second time.

120. As shown in the table above, the limitations of claims 1 and 5 are nearly identical. Therefore, for the reasons discussed in connection with claim 1, the limitations of claim 5 are also disclosed by and obvious over Crawford, Watson, Stevens, and Snader.

121. To the extent the preamble of claim 5 provides a limitation, it does not provide a patentable distinction. For example, Crawford teaches a "computer program stored on a computer readable medium. The computer readable medium may comprise a disc, a client device, a host device, and/or a propagated signal." (Crawford, Ex. 1003, 2:20-23.) Crawford further teaches that:

> client controller **125** is a software application loaded on the client device **120** for commanding and directing communications enabled by the client device **120**. Other examples include a program, a piece of code, an instruction, a device, a computer, a computer system, or a combination thereof, for independently or collectively instructing the client device **120** to interact and operate as described herein. The client controller **125** may be embodied permanently or temporarily in any type of machine, component, equipment, storage medium, or propagated signal capable of providing instructions to the client device

120.

(Crawford, Ex. 1003, 3:23-34 (underlining added).) Crawford explains that the transfer of files "may be implemented by any suitable type of hardware, software, device, computer, computer system, equipment, component, program, application, code, storage medium, or propagated signal." (Crawford, Ex. 1003, 13:56-60.) Crawford says "[t]he general-purpose computer **270** also includes a central processing unit **282** (CPU) for executing instructions in response to commands from the client controller **225**." (Crawford, Ex. 1003, 4:56-58.)

122. Moreover, a person of ordinary skill in the art would have understood that the preamble simply recites conventional and generic components needed to implement a computer-based system, such as the software system of Crawford. Indeed, the Microsoft Computer Dictionary (5th ed. 2002) explains in its entry for "microprocessor" that "[w]hen memory and power are added to a microprocessor, all the pieces, excluding peripherals, required for a computer are present." (Ex. 1015, p.338.)

6. Claims 6-8

123. As shown in the table below, claims 6-8 recite the "non-transitory computer readable medium" counterparts to "method" claims 2-4 (underlining added to indicate identical language):

Claims 2-4	Claims 6-8
2. The method of claim **1**, wherein the input is a resumption message.	6. The non-transitory computer readable medium of claim **5**, wherein the input is a resumption message.
3. The method of claim **2**, further comprising outputting in the electronic conversation a second indication representative of at least a portion of the resumption message.	7. The non-transitory computer readable medium of claim **6**, further comprising computer executable instructions such that, when executed, the processor outputs in the electronic conversation a second indication representative of at least a portion of the resumption message.
4. The method of claim **3**, wherein the time stamp is disposed between the first indication and the second indication.	8. The non-transitory computer readable medium of claim **7**, wherein the time stamp is disposed between the first indication and the second indication.

124. Therefore, for the reasons discussed above in connection with claims 2-4, claims 6-8 are also disclosed by and obvious over Crawford, Watson, Stevens, and Snader.

7. Claim 9

125. As shown in the table below, independent claim 9 recites the "electronic device" counterpart to the "method" of independent claim 1 (underlining added to indicate identical language):

Claim 1	Claim 9
1. A method of operating an electronic device, the method comprising:	9. An electronic device for displaying an instant message conversation, the instant message conversation comprising a plurality of instant messages exchanged between the electronic device and a second electronic device, the electronic device comprising:
	a display;
	a memory; and
	a processor electronically coupled with the display and the memory, the processor configured to:
outputting an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and a second electronic device;	output an electronic conversation comprising a plurality of indications, each indication being representative of at least a portion of a corresponding messaging communication between the electronic device and the second electronic device;
identifying a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;	identify a first messaging communication between the electronic device and the second electronic device occurring at a first time, the first messaging communication having a corresponding first indication representative of at least a portion of the first messaging communication and which is one of the plurality of indications;

Claim 1	Claim 9
determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;	determine that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time;
detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and	detect an input to the electronic device following said identifying and determining steps, said input occurring at a second time; and
responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time.	responsive to said detecting an input, output in the electronic conversation, a time stamp representative of the second time.

126. As shown in the table above, the limitations of claims 1 and 9 are nearly identical. Therefore, for the reasons discussed in connection with claim 1, the limitations of claim 9 are also disclosed by and obvious over Crawford, Watson, Stevens, and Snader.

127. Claim 9 further recites "**a display**," "**a memory**" and "**a processor electronically coupled with the display and the memory**." These limitations do not provide a patentable distinction over claim 1. Crawford discloses these limitations in claim 9.

128. Crawford discloses **a display**. For example, Crawford says: "[e]xamples of peripheral devices **290** include … a mobile phone **292**, a personal digital assistant **293** (PDA), a keyboard **294**, a display monitor **295** with or without

a touch screen input, and/or a TV remote control **296** ...." (Crawford, Ex. 1003, 5:16-20 (underlining added); *see also id.* Figs. 1, 2, 9, 14, 16; 16:22-24; 5:9-13.)

129. Crawford discloses **a memory**. For example, Crawford explains that the "client device **220** typically includes a general purpose computer **270** having an internal or external storage **272** for storing data and programs such as an operating system **274** (e.g., DOS, Windows™, Windows 95™, Windows 98™, Windows 2000™, Windows NT™, OS/2, or Linux) and one or more application programs." (Crawford, Ex. 1003, 4:39-44 (underlining added); *see also id.*Fig. 2 (item 272 labeled "MEMORY").)

130. Crawford discloses "**a processor electronically coupled with the display and the memory**." For example, Crawford teaches:

> The general-purpose computer **270** also includes a central processing unit **282** (CPU) for executing instructions in response to commands from the client controller **225**. In one implementation, the client controller **225** includes one or more of the application programs installed on the internal or external storage **252** of the general-purpose computer **250**. In another implementation, the client controller **225** includes application programs externally stored in and performed by one or more device(s) external to the general-purpose computer **270**.

(Crawford, Ex. 1003, 4:56-65 (underlining added).) Additionally, Figure 2 teaches a "CPU" (282) coupled with a "Display" (295) and "MEMORY" (272):

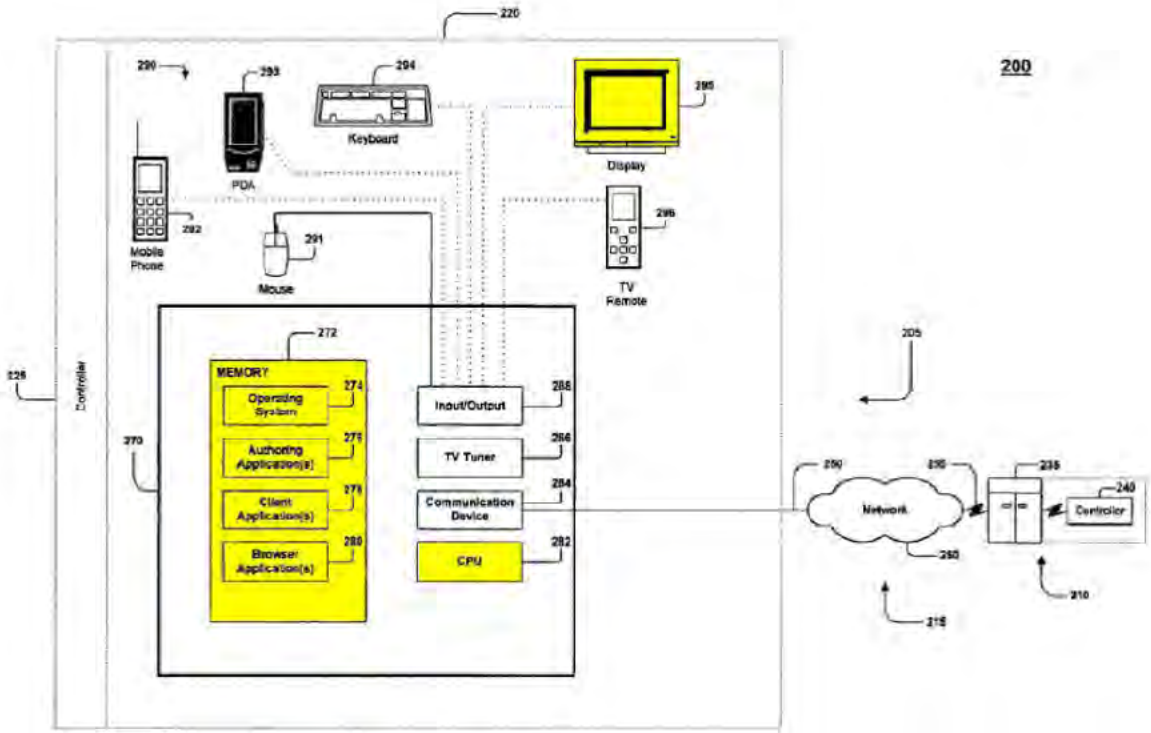

Fig. 2

(Crawford, Ex. 1003, Fig. 2 (yellow highlighting added).)

131. Moreover, a person of ordinary skill in the art would have understood the elements of claim 9 to be merely conventional and generic components needed to implement a computer-based system that displays information, such as the software system of Crawford. For example, the Microsoft Computer Dictionary (5th ed. 2002) explains in its entry for "microprocessor" that "[w]hen memory and power are added to a microprocessor, all the pieces, excluding peripherals, required for a computer are present." (Ex. 1015, p.338.)

132. In addition, to the extent the preamble of claim 9 provides a limitation,

it too does not provide a patentable distinction. As I have amply explained, Crawford describes "**an electronic device for displaying an instant message conversation, the instant message conversation comprising a plurality of instant messages exchanged between the electronic device and a second electronic device**."

8. Claims 10-12

133. As shown in the table below, claims 10-12 recite the "electronic device" counterparts to "method" claims 2-4 (underlining added to indicate identical language):

Claims 2-4	Claims 10-12
2. The method of claim 1, wherein the input is a resumption message.	10. The electronic device of claim **9**, wherein the input is a resumption message.
3. The method of claim **2**, further comprising outputting in the electronic conversation a second indication representative of at least a portion of the resumption message.	11. The electronic device of claim **10**, wherein the processor is further configured to output in the electronic conversation a second indication representative of at least a portion of the resumption message.
4. The method of claim **3**, wherein the time stamp is disposed between the first indication and the second indication.	12. The electronic device of claim **11**, wherein the time stamp is disposed between the first indication and the second indication.

134. Therefore, for the reasons discussed above in connection with claims 2-4, claims 10-12 are disclosed by and obvious over Crawford, Watson, Stevens,

and Snader.

D. Ground 2: Obviousness of Claims 4, 8 and 12 Based on Crawford, Watson, Stevens, Snader and Erickson

1. Claim 4

135. Claim 4 depends from claim 3 and further recites "**wherein the time stamp is disposed between the first indication and the second indication**."

136. As explained for claim 1, the combination of Crawford and Watson discloses and renders obvious outputting timestamps for messages in an instant messaging conversation. However, as I explained in the discussion of claim 4 for **Ground 1**, the timestamps under this combination appear on the same line as its associated message:

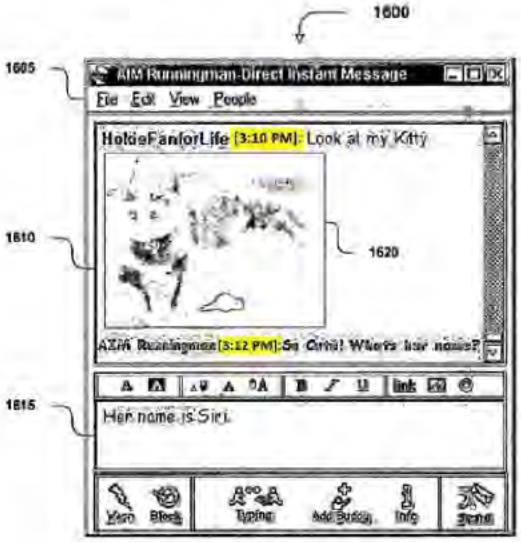

Fig. 16

(Crawford, Ex. 1003, Fig. 16 (yellow highlighted timestamps added).) As I

explained, to the extent the claim limitation requires outputting the time stamps on a different vertical plane than their corresponding messages, this is disclosed by **Erickson**.

137. As discussed, Erickson describes a "functioning server and client system" called Babble that resembles a "combination of chat and bulletin boards." (Erickson, Ex. 1007, p.73.) Erickson explains that in the system, "once the text is composed, the user clicks a 'Done' button and the comment is appended to the end of the conversation, with a name and time stamp." (Erickson, Ex. 1007, p.75 (underlining added).) An excerpt of Figure 3, showing a screenshot of a Babble conversation and timestamps, is shown below:

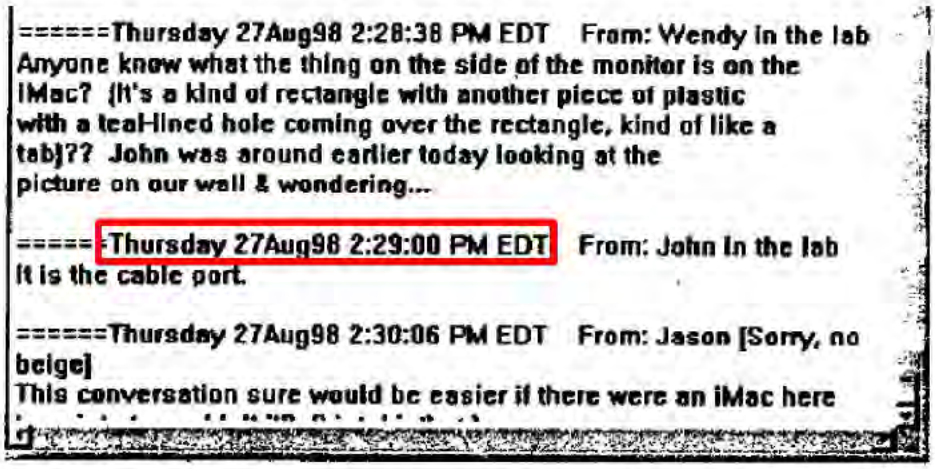

Figure 3. A screenshot of Babble. At the moment shown, all participants are in the same conversation (Commons

(Erickson, Ex. 1007, p.75, Fig. 3 (excerpt; red box added).) As shown above, the

time stamp of "Thursday 27Aug98 2:29:00 PM EDT" is disposed between two messages, one from "Wendy in the lab" and one from "John in the lab."

138. ***Rationale and Motivation to Combine***. It would have been obvious to a person of ordinary skill in the art to combine the timestamp placement of Erickson with the instant messaging system of Crawford and Watson. It would have involved the combination of existing features of Erickson, Crawford and Watson, with no change in their respective functions, and would have predictably resulted in the instant messaging system of Crawford and Watson in which timestamps were output above, rather than on the same line as, their associated messages in an instant messaging conversation.

139. Erickson is an analogous reference to Crawford and Watson. As noted, Erickson explains that its Babble system resembles a "combination of chat and bulletin boards." (Erickson, Ex. 1007, p.73.) Erickson further discloses Babble users can carry out "private, one-to-one chats." (Erickson, Ex. 1007, p.75.) A person of ordinary skill in the art would have therefore naturally looked to Erickson's disclosures when trying to implement or improve the system of Crawford and Watson, including in deciding how to visually present the timestamp during the instant message conversation.

140. Moreover, a person of ordinary skill in the art would have considered

the placement of timestamps to be a routine design decision, and placing timestamps vertically between messages, rather than next to them, would have been obvious to try. As noted, Watson provides express motivation to output timestamps for instant messages, and a person of ordinary skill in the art would have recognized that there are a finite number of locations to place timestamps in an instant messaging conversation that would achieve the intended benefit, including either above or beside their associated messages. Moreover, commercially-available instant messaging software confirms that the placement of timestamps would have been a routine design decision, and further, that a person of ordinary skill in the art would have had a reasonable expectation that placing timestamps between messages would have been successful. For example, the well-known and popular Skype communications platform included instant messaging software where timestamps were inserted between messages:

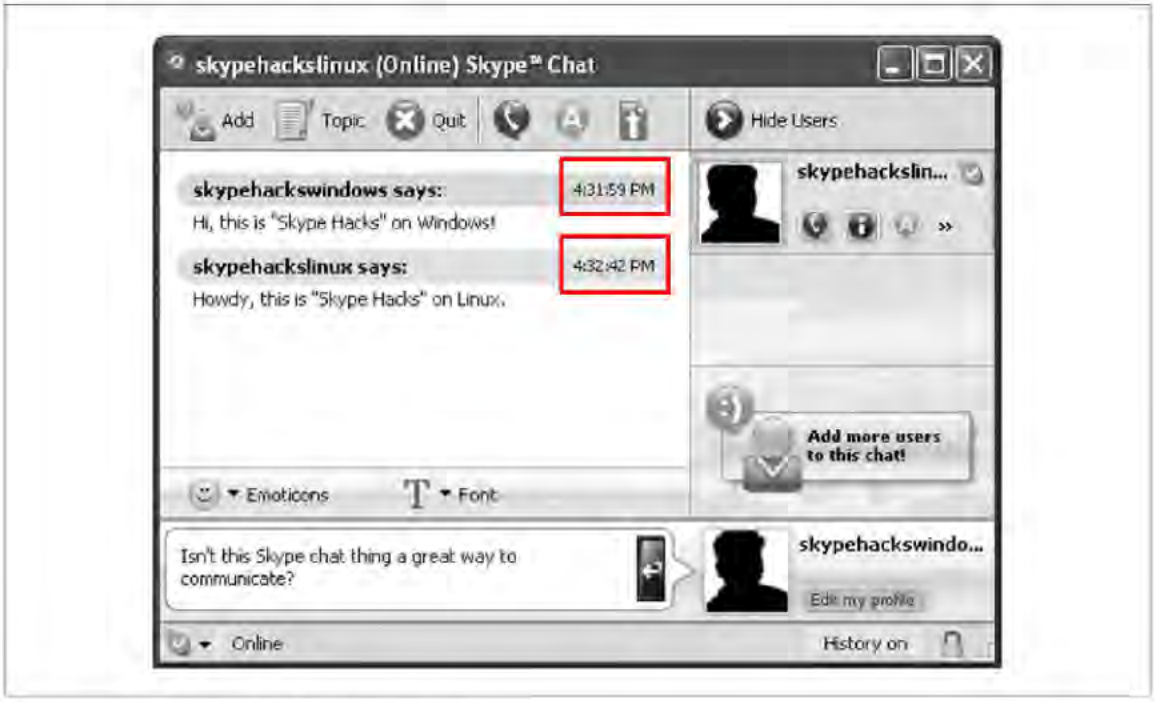

Figure 1-6. The Skype chat window

(Sheppard, Ex. 1017, p.12 (red boxes added); *see also id.*, p.10 ("settings for…timestamp display"), back cover ("With over 50 million registered users and over three million users online at any one time, Skype is one of the biggest Internet phenomena since the Web.").)

141. Erickson further provides express motivation to combine and adapt its timestamp placement to Crawford and Watson. Erickson explains that "[b]y scanning the name and time stamp headers that precede each comment, the tempo of the conversation, the number of participants, and the presence or absence of frequent participants can be inferred." (Erickson, Ex. 1007, p.74.) A person of

ordinary skill in the art would have accordingly recognized that placing timestamps vertically between messages (instead of adjacent to them) could allow the user to more quickly distinguish the timestamp from the message content. This would, to use Erickson's term, enable the user to more easily infer "the tempo of the conversation." (*Id.*)

142. A person of ordinary skill in the art would have expected the combination to be successful. As explained in connection with the combination of Crawford and Watson, a person of ordinary skill in the art would have perceived no technical obstacle to adding timestamps. As to the addition of Erickson, the change would be even more trivial as it simply involves changing where the timestamps appear in relationship to the instant message content.

2. Claim 8

143. As shown in the table below, claim 8 recites the "non-transitory computer readable medium" counterpart to "method" claim 4 (underlining added to indicate identical language):

Claim 4	Claim 8
4. The method of claim **3**, wherein the time stamp is disposed between the first indication and the second indication.	8. The non-transitory computer readable medium of claim **7**, wherein the time stamp is disposed between the first indication and the second indication.

144. Therefore, for the reasons discussed above in connection with claim 4,

claim 8 is also disclosed by and would have been obvious in view of Crawford, Watson, Stevens, Snader and Erickson.

3. Claim 12

145. As shown in the table below, claim 12 recites the "electronic device" counterpart to "method" claim 4 (underlining added to indicate identical language):

Claim 4	Claim 12
4. The method of claim **3**, wherein the time stamp is disposed between the first indication and the second indication.	12. The electronic device of claim **11**, wherein the time stamp is disposed between the first indication and the second indication.

146. Therefore, for the reasons discussed above in connection with claim 4, claim 12 is also disclosed by and would have been obvious in view of Crawford, Watson, Stevens, Snader, and Erickson.

E. Ground 3: Obviousness of Claims 1-3, 5-7, 9-11 Based on Crawford, Watson and Missig

1. Claim 1

147. Ground 3 uses the same mapping described above with Crawford and Watson in Ground 1, but instead of using Stevens and Snader for the "determining" step, Ground 3 cites Missig (**Ex. 1008**).

148. As explained above, the combination of Crawford and Watson discloses and renders obvious claim 1[a] and claim 1[b]. For example, Figure 16 of Crawford shows an IM conversation with the first indication corresponding to

HokieFanforLife's message that includes the text "Look at my Kitty" and an accompanying image, and the second indication corresponding to AIM Runningman's reply "So Cute! Whats her name?"

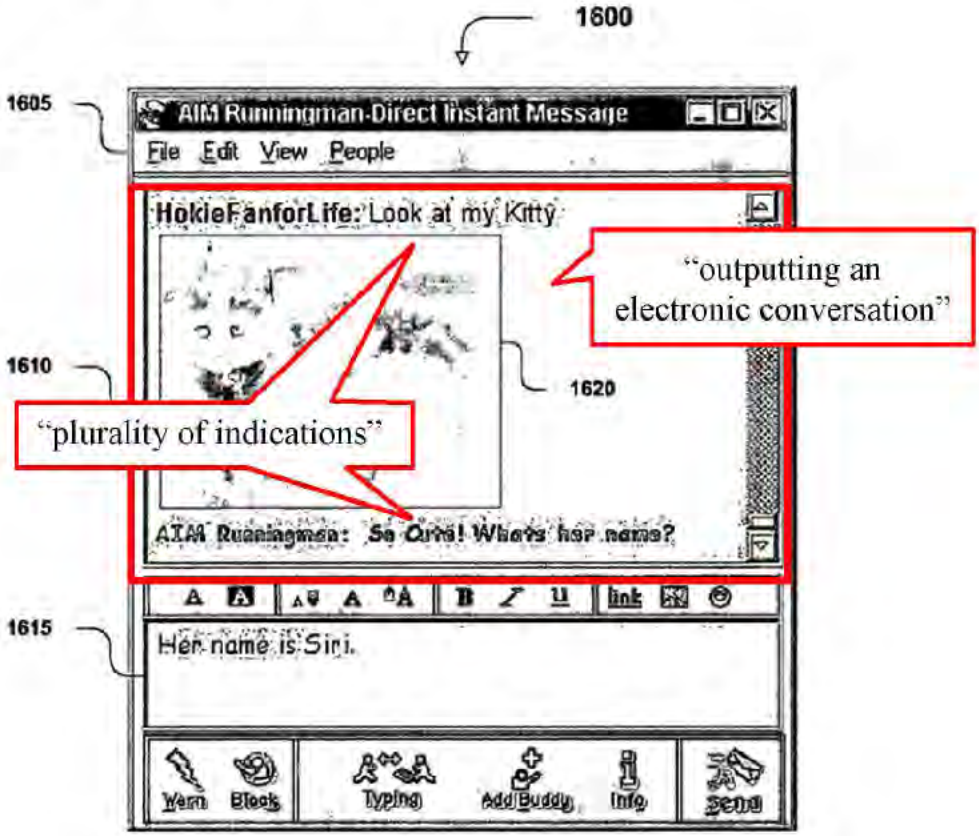

Fig. 16

(Crawford, Ex. 1003, Fig. 16 (red box and annotations added).) Crawford further discloses messages exchanged between the client devices of users "HokieFanforLife" and "AIM Runningman." (Crawford, Ex. 1003, Fig. 16, Fig. 9 (steps 910, 915 ("Display connected message"), 16:18-24, 16:39-44, 16:49-53.)

149. Watson teaches timestamping for instant messages:

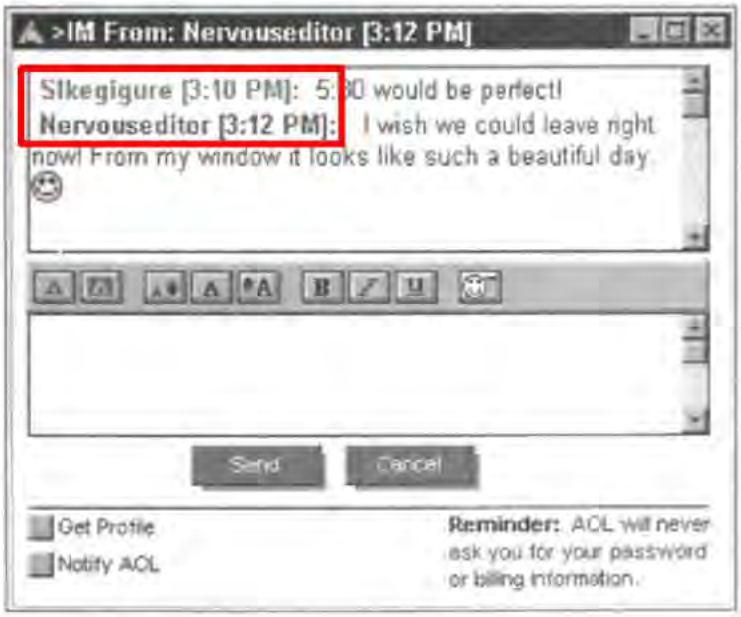

Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155 (red boxes added).) Ground 3 relies upon the same mapping of Crawford and Watson as described above, which is incorporated here. As explained, the following version of Figure 7-7 of Watson, that I created for this Declaration, shows one way in which those Watson's timestamps can be presented on the instant message screen (Figure 16) of Crawford:

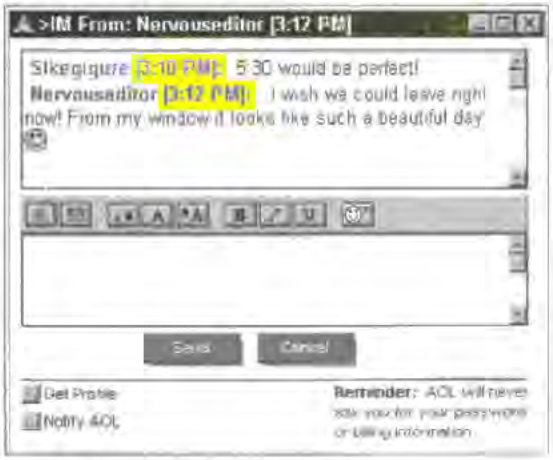

Figure 7-7. An instant message conversation with timestamps.

(Watson, Ex. 1004, p.155 (highlighting added).)

150. For claim 1[c], instead of Snader, I cite **Missig**. Claim 1[c] recites "**determining that a predetermined duration of time has elapsed since the first time without additional communication between the electronic device and the second electronic device during that duration of time**." Claim 1[c] would have been obvious to a person of ordinary skill in the art in view of Crawford and Watson, in further view of **Missig**.

151. As explained above, Missig is intended for developers of instant messaging systems to help "improve" their systems, based on the purported features of Apple's iChat instant messaging software. With respect to the placement of timestamps, Missig explains:

> The placement of the timestamps is also of note. It's one of the least obtrustive [sic] uses of timestamps I've ever seen. They appear in small

> text centered at the top when the chat starts, and whenever there is a gap of about 5 minutes or so (I haven't determined the actual length) if a new message is sent, a new timestamp is printed.

(Missig, Ex. 1008, at 002 (underlining added).)

152. Missing discloses the step of "**determining that a predetermined duration of time has elapsed**" as claimed. As noted, Missig explains that "whenever there is a gap of about 5 minutes or so … a new timestamp is printed." (Missig at 002 (underlining added).) Because Missig indicates that a "gap of about 5 minutes or so" is always used ("whenever") in determining whether to print a new timestamp, a person of ordinary skill in the art would have understood "about 5 minutes or so" to be a ***predetermined* duration**. A person of ordinary skill in the art would have further understood the "gap of about 5 minutes or so" to describe a **duration of time [that] elapse[s] since the first time without additional communication between the electronic device and the second electronic device during that duration of time**. It would also have been obvious that in order for the software to respond and output a timestamp "whenever there is a gap of about 5 minutes or so," the software would need to be able to **determine** that this duration of inactivity has in fact occurred.

153. Therefore, a person of ordinary skill in the art would have understood Missig to disclose this step.

Missig Statement: "This is bad."

154. I note that directly under the paragraph from Missig quoted above discussing the timestamps, Missig writes:

> This is bad. Very bad. Technically, I understand completely why Apple did this. However, user interface design should not be catering to the technology. Sure, it's nice to know someone left the chat and all, but **I cannot send a message now**. I have to go back to my buddy list and open up a new chat.

(Missig, Ex. 1008, at 002 (bold in original).) A person of ordinary skill in the art would have understood that this paragraph refers to a different topic than the timestamps discussed earlier – closing the chat session after the other user has left. A review of the HTML from the Internet Archive page from February 4, 2003 (**Ex. 1018**), which I relied upon earlier, shows that the web page HTML refers to another in-lined linked image ("msgsend3.png") which should have appeared between the discussion about timestamps and the paragraph quoted above. This image was apparently not archived by the Internet Archive with respect to the February 4, 2003 capture, and thus, does not appear in the archived Missig web page from the Butler Affidavit. But a later archived version of the same Missig web page (from March 29, 2004) shows the missing screen picture in which "Clare Wagner" has left the chat, confirming that the "This is bad" discussion related to another subject area.

(Ex. 1010 at 039.) In any event, a person of ordinary skill in the art would have understood that the paragraph beginning "This is bad" is not referring to the timestamp feature (that Missig earlier applauds), and therefore, would not have taught away from using that feature described by Missig.

Missig Screenshot Images

155. I also note that Missig contains a number of images purporting to show screenshots of the iChat features he discusses. I have not relied on those images because the Butler Affidavit states that the date assigned by the Internet Archive as indicated in the URL of the pages "applies to the HTML file but not to image files linked therein." (Ex. 1010 at 001, ¶5.) This is presumably because linked image files have URLs that are separate from the URL for the HTML document, and thus, may have been separately archived at different times. Because the content on which I rely from Missig is the HTML content, the February 4, 2003 date applies. Because the linked images do not appear to have dates contemporaneous with the HTML content on which I rely, I have not relied on those images in my analysis. The figures nevertheless do not detract from, and in fact support, my opinions. The following shows a side-by-side view of the first two images in Missig:

(Missig, Ex. 1008, at 001-002.) The left image shows a conversation in which the other user is currently composing a message (as shown by the "thought bubble"), and the right image shows that the other user chose not to send a message after all. These two figures confirm the existence of a gap in the conversation prior to the insertion of the "20:00" timestamp on the right image.

156. ***Rationale and Motivation to Further Combine with Missig.*** It would have been obvious to a person of ordinary skill in the art to further combine Crawford and Watson with Missig. This combination would have predictably resulted in the instant messaging system of Crawford and Watson in which "whenever there is a gap of about 5 minutes or so," a "new timestamp is printed." (Missig, Ex. 1008, at 002.)

157. A person of ordinary skill in the art would have had ample reason to combine Crawford, Watson and Missig. For starters, each pertains to instant messaging. Crawford refers to America Online providing "subscribers with the

ability to send and receive instant messages" (Crawford, Ex. 1003, 1:25-26), while Watson similarly describes features of AOL's Instant Messenger software. Missig refers to available instant messaging systems such as Apple's iChat and Jabber. (Missig, Ex. 1008, at 001.) A person of ordinary skill in the art, trying to implement or improve the system of Crawford and Watson, would have naturally looked to a reference such as Missig for detail or ideas. Missig is therefore clearly analogous to Crawford and Watson.

158. Moreover, Missig provides an express motivation to combine by describing the iChat time stamps as "one of the least obtrustive [sic] uses of timestamps I've ever seen." (Missig, Ex. 1008, at 002.) A person of ordinary skill in the art would have been motivated to adapt this "least obtrusive" timestamp display in order to improve the user experience of Crawford and Watson. A person of ordinary skill in the art would thus have been motivated to adapt Crawford and Watson to determine whether a predetermined duration of time has elapsed (*e.g.* "about 5 minutes or so") without additional communications between the sender and recipient.

159. Missig also expressly suggests looking at other messaging applications for ideas and functionality to improve instant messaging applications. For example, Missig says that his analysis is for instant messaging client developers, and he would

like other instant messaging clients (namely, an instant messaging system called "Jabber") to "improve." (Missig, Ex. 1008, at 001.) Missig discusses looking at Apple's iChat for ideas and functionality to improve Jabber. (Missig at 001.) Just like Missig looked at iChat for ideas for Jabber, a person of ordinary skill would have looked at Missig for ideas for improving and implementing Crawford and Watson.

160. Missig also emphasizes the need for "usability" in "Instant Messaging client development." (Missig, Ex. 1008, at 001.) A person of ordinary skill would have readily appreciated that Missig's teachings about a predetermined duration of time would have increased usability for the instant messaging system of Crawford. A person of ordinary skill would have recognized that Missig's teachings of looking for a "gap" in conversation would have improved the functionality of Crawford, allowing users to know how much time had elapsed in the conversation, and reminding users to respond to messages in a conversation.

161. Combining Missig would also efficiently achieve Watson's identified benefits of timestamping. Watson says that displaying the time is "wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed." (Watson, Ex. 1004, p.155.)

162. Additionally, there are a finite number of ways for whether to include

time stamps and how to include time information in a conversation. The combination of Missig, Crawford and Watson would have involved the combination of existing elements according to their established functions, and would have predictably resulted in the instant messaging system of Crawford and Watson in which a predetermined duration of time is determined. As explained above, Watson already teaches tracking time information using a timestamp (*e.g.*, Watson, Ex. 1004, p.155), and it would have been straightforward to a person of ordinary skill in the art to include functionality to determine that a duration of time had elapsed in the conversation.

163. There would have been no technical obstacle to combining Missig with Crawford and Watson, and a person of ordinary skill would have expected the combination to be successful and predictable. Combining Crawford, Watson and Missig would have been viewed as nothing more than a routine and conventional modification to an instant messaging system. This combination would have been well within the means of a person of ordinary skill in the art.

164. Turning to claim 1[d], it recites "**detecting an input to the electronic device following said identifying and determining steps, said input occurring at a second time**." Claim 1[d] would have been obvious to a person of ordinary skill in the art in view of Crawford, Watson and Missig.

165. As explained above, this limitation simply corresponds to a user device of Crawford receiving a second instant message (or detecting a command to send the user's own message) where whenever there is a "gap of about 5 minutes or so," a "new timestamp is printed." (Missig, Ex. 1008, at 002.) A person of ordinary skill in the art would have understood, and found it obvious, that a connection for an IM conversation could be idle for 5 minutes or so. (*E.g.*, Fay, Ex. 1009, ¶0038 ("[I]t is well known that chats often occur with large time breaks between 'conversation.'").)

166. Lastly, as explained above, Crawford and Watson disclose claim 1[e], which recites "**responsive to said detecting an input, outputting in the electronic conversation, a time stamp representative of the second time**." Watson discloses outputting a timestamp with a message in an IM conversation, where the timestamp represents the time that the message was sent or received. (Watson, Ex. 1004, p.155 ("Now when you send and receive messages, the time is displayed to the right of the screen name, as shown in Figure 7.7."), p.147 ("AOL 6.0 introduces a new timestamping feature that lets you see when your instant messages are sent and received.").)

167. Moreover, this limitation would have also been obvious in further view of Missig. As discussed, the plain language of the claim does *not* require outputting a timestamp *only* for a message that is received after the predetermined duration of

time elapses. However, to the extent that there were such a requirement, it is disclosed by and obvious in view of Missig. As explained, Missig discloses selectively inserting timestamps "whenever there is a gap of about 5 minutes or so" in the conversation. (Missig, Ex. 1008, at 002.) I addressed the rationale and motivation to combine Missig with Crawford and Watson above, which applies here as well. In addition, Missig provides express motivation to selectively insert timestamps only after a gap "of about 5 minutes or so," explaining that "[t]he placement of the timestamps is also of note. It's one of the least obtrustive [sic] uses of timestamps I've ever seen." (Missig Ex. 1008, at 002.) A person of ordinary skill in the art would have further understood that selectively inserting timestamps only after a gap "of about 5 minutes or so," would have furthered Watson's stated benefit of being "helpful in determining if a message is recent or if it has been sitting there a while unnoticed" (Watson, Ex. 1004, p.155) by helping to avoid a cluttered user interface with screen space by avoiding presenting unnecessary information (e.g. an excessive number of timestamps).

2. Claim 2

168. As explained in connection with Ground 1, claim 2 depends from claim 1 and further recites "**wherein the input is a resumption message**."

169. Ground 2 relies upon the same mapping of Crawford and Watson for

claim 2, as described above, which is incorporated here, except that instead of using Snader, I use Missig. Claim 2 is disclosed by and would have been obvious over Crawford, Watson and Missig.

170. As stated above, I understand that the parties have agreed that a "resumption message" is a "message after a period of interruption."

171. As explained for Ground 2, a person of ordinary skill in the art would have understood, and found it obvious, a message may be input after a period of interruption. For example, Watson describes timestamps as being "wonderfully helpful in determining if a message is recent or if it has been sitting there a while unnoticed" and Fay acknowledges that "it is well known that chats often occur with large time breaks between 'conversation.'" (Watson, Ex. 1004, p.155 (underlining added); Fay, Ex. 1009, ¶0038.) Missig further acknowledges that there can be interruptions in an instant messaging conversation, explaining that timestamps are printed "whenever there is a gap of about 5 minutes or so."

3. Claim 3

172. Claim 3 depends from claim 2 and further recites "**outputting in the electronic conversation a second indication representative of at least a portion of the resumption message**."

173. Claim 3 is disclosed by and would have been obvious over Crawford,

Watson and Missig. As explained above, I addressed claim 3 in my analysis of claims 1 and 2 above. As explained, Crawford and Watson disclose and render obvious outputting messages with timestamps in an instant messaging conversation, including a message input after a period of interruption (i.e., "resumption message").

4. Claims 5-7

174. As explained in connection with Ground 1, claims 5-7 recite the "non-transitory computer readable medium" counterparts to the "method" of claims 1-3 and do not provide a patentable distinction over the prior art. Therefore, for the reasons discussed for claims 1-3 and in my analysis of claims 5-7 for Ground 1, claims 5-7 are disclosed and obvious.

5. Claims 9-11

175. As explained in connection with Ground 1, claims 9-11 recite the "electronic device" counterparts to the "method" of claims 1-3 and do not provide a patentable distinction over the prior art. Therefore, for the reasons discussed for claims 1-3 and in my analysis of claims 9-11 for Ground 1, claims 9-11 are disclosed by and would have been obvious in view of the prior art.

F. Ground 4: Obviousness of Claims 4, 8 and 12 Based on Crawford, Watson, Missig and Erickson

1. Claims 4, 8 and 12

176. Claim 4 depends from claim 3 and further recites "**wherein the time**

stamp is disposed between the first indication and the second indication."

177. As explained for Ground 2, Erickson discloses and renders obvious the additional limitations of claim 4. For the same reasons discussed for Ground 2, claim 4 is disclosed by and would have been obvious over Crawford, Watson, Missig, and Erickson. The combination of these references would have predictably resulted in the instant messaging system of Crawford, Watson and Missig in which timestamps were inserted between messages rather than beside them. The rationale and motivation to combine Erickson discussed for Ground 2 applies here.

178. **Claims 8 and 12**. As explained in connection with Ground 2, claims 8 and 12 merely recite the "non-transitory computer readable medium" and "electronic device" counterparts, respectively, to "method" claim 4. Therefore, for the reasons discussed for claim 4, claims 8 and 12 is also disclosed by and would have been obvious in view of Crawford, Watson, Missig and Erickson.

VI. NO SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

179. I understand from counsel that the Patent Owner in the underlying district court litigation has not yet identified any evidence with respect to secondary considerations of non-obviousness.

180. To the extent the Patent Owner cites any evidence of sales or any praise or any industry recognition of products that the Patent Owner asserts to implement

the claimed invention, I am not aware of any information demonstrating that any increased sales, commercial success, praise, or any other secondary factor (that the Patent Owner may assert) was a result of *the particular features recited in the '713 patent's claims*. Since the Patent Owner has not yet identified any evidence of secondary considerations, the Patent Owner cannot demonstrate that the limitations of the claimed invention in particular, as opposed to other features of the products at issue, were the factors that caused any increased sales, praise, or any other asserted secondary considerations.

181. Thus, based on my review of the evidence to date, I can summarize my opinions regarding any alleged secondary considerations of non-obviousness relating to the '713 Patent, as follows:

182. *No commercial success of the claimed invention*. The Patent Owner has not cited any evidence of particular commercial success of products embodying the '713 patent as opposed to products that do not embody the '713 patent. The Patent Owner has not cited any evidence that any commercial success of any products is particularly a result of the claimed inventions recited in the '713 patent's claims and not due to any other facts.

183. *No long-felt but unsolved need.* The Patent Owner has not cited any evidence of any long-felt need that remained unsolved in the prior art before the

'713 patent. To the contrary, as discussed above, the prior art solved the problems that the '713 patent purported to address.

184. *No failure of others*. The Patent Owner has not cited any evidence of anyone who tried, but failed, to solve the problems addressed by the '713 patent. As shown by my analysis above, there existed prior art references that successfully disclosed and rendered obvious the subject matter claimed by the '713 patent.

185. *No copying of the claimed invention*. The Patent Owner has not cited any evidence that any other party (including Facebook or third parties) ever copied from the '713 patent and its claimed invention.

186. *No unexpected results of the claimed invention*. The Patent Owner has not cited any evidence of unexpected results achieved by the '713 patent's claimed invention. To the contrary, the prior art disclosed the predictable, expected results that show why the '713 patent's claims are obvious as discussed in my Declaration.

187. *No praise for the claimed invention*. The Patent Owner has not cited any evidence of praise for the claimed invention recited in the '713 patent.

188. *No surprise or skepticism at the claimed invention*. The Patent Owner has not cited any evidence that observers were surprised by, or skeptical of, the claimed invention recited in the '713 patent.

189. *No departure from the wisdom of the prior art*. The Patent Owner has

not cited any evidence that the claimed inventions of the '713 patent departed from the wisdom of the prior art. The '713 patent claims subject matter that was already present in the prior art, including in the references discussed in my analysis above.

190. Moreover, with respect to the considerations discussed above, I also refer to and incorporate my opinions stated throughout this Declaration, including my analysis showing that the '713 patent is directed to techniques known in the prior art and does not provide any inventive technology.

191. To the extent the Patent Owner at a later date cites or provides any other evidence regarding secondary considerations, including any expert opinions, I reserve the right to supplement my analysis and opinions to comment on it.

VII. CONCLUSION

192. In signing this Declaration, I recognize that the Declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in this proceeding. If required, I will appear for cross-examination at the appropriate time. I reserve the right to offer opinions relevant to the invalidity of the '713 patent claims at issue and/or offer testimony in support of this Declaration.

193. I hereby declare that all statements made herein of my own knowledge

are true and that all statements are made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001.

Dated: March 29, 2019

Respectfully submitted,

Sandeep Chatterjee, Ph.D.
Foster City, California

EXHIBIT A

EXPERANTIS
Expert Services for Commercial Litigation

Harvard University
Exec. Ed., Global Leadership

Massachusetts Institute of Technology
Ph.D., Computer Science
M.S., Computer Science

University of California at Berkeley
B.S., Electrical Engineering & Computer#

Sandeep Chatterjee, Ph.D.
Chief Executive Officer

Professional Summary

Sandeep Chatterjee, Ph.D. is a seasoned technology expert and business professional with almost two decades of hands-on contributions as a thought leader, technologist, consultant, entrepreneur, and author. He is an expert in computer software and hardware systems, with particular emphasis on distributed systems and architectures, service-oriented architectures (SOAs), software-as-a-service (SaaS) and Web Services, end-to-end security, quality-of-service (QoS), communications and telecommunications systems, location-based services, social network services and social media, as well as mobile and wireless systems and applications. He is the co-author of a book on developing enterprise computing systems, which has been adopted by over 100 universities worldwide.

Dr. Chatterjee also has extensive experience with providing expert testimony for intellectual property and commercial litigation, including for high stakes patent litigation, copyright and trade secret misappropriation, contract disputes and patent licensing cases. He has testified at trial, and has had his deposition taken more than 40 times. Dr. Chatterjee combines strong experience with expert testimony within the context of litigation together with worldwide experience in designing, architecting and implementing complex computing systems.

Honors & Achievements

- Named a **Young Global Leader** by the **World Economic Forum** for professional accomplishments, commitment to society and potential to contribute to shaping the future of the world.
- Doctoral dissertation at the Massachusetts Institute of Technology (MIT) was selected as one of the **most important inventions in computing**, and the invention is preserved and showcased in a time-capsule at the Museum of Science in Boston, Massachusetts. Other recipients of this honor include **Bill Gates** (founder of Microsoft) and **Tim Berners-Lee** (inventor of the World Wide Web).
- Technology solution designed by Dr. Chatterjee was identified as a Bloomberg Innovation, and the company he co-founded to commercialize that technology solution was featured on Bloomberg TV's "**Bloomberg Innovators**" program.
- Member of the **JSR 172 Expert Group** that defined the worldwide standard for J2ME mobile Web services.

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Professional Experience

From:	2016
To:	present
Organization:	International Institute of Digital Technologies
Title:	Dean, Mobility Center of Excellence
Summary:	International Institute of Digital Technologies (IIDT) is a leading institute of higher education, focused on digital technologies.

From:	2013
To:	present
Organization:	Experantis LLC
Title:	Chief Executive Officer
Summary:	Experantis LLC provides consultation and services in all facets of commercial litigation.

From:	2013
To:	present
Organization:	S3G Technology LLC
Title:	Member
Summary:	S3G Technology LLC provides consultation, products and services related to mobile and wireless solutions that deliver critical services to semi-urban, rural and remote populations across the world.

From:	2011
To:	present
Organization:	World Economic Forum
Title:	Young Global Leader; Member of the Expert Network
Summary:	The World Economic Forum is an international institution for public-private cooperation, and its mission is cited as "committed to improving the state of the world by engaging business, political, academic, and other leaders of society to shape global, regional, and industry agendas."

From:	2007
To:	present
Organization:	Shuv Gray LLC
Title:	Chief Executive Officer
Summary:	Shuv Gray LLC provides information technology and intellectual property consultation and services.

From:	2007
To:	2012
Organization:	SourceTrace Systems, Inc.
Title:	Chief Technology Officer & Executive Vice President
Summary:	SourceTrace Systems is a leading vendor of end-to-end mobile and wireless distributed transactional systems for the financial services, agricultural commodities,

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and product distribution markets around the world.

From: 2004
To: 2007
Organization: Cyndeo LLC
Title: Chief Executive Officer
Summary: Founded Cyndeo to be a leading provider of enterprise integration and mobilization solutions as well as technology strategy consulting and outsourcing services to global corporations, government agencies, and major not-for-profit organizations. Cyndeo provides consulting, software engineering development, and management services to companies and organizations of all sizes, from Fortune Global 100 corporations to small organizations in developing countries.

From: 2001
To: 2002
Organization: Hewlett-Packard (Palo Alto, CA)
Title: Senior Member of Technical Staff
Summary: Independently identified a need in the mobile and e-Business marketplace for a more flexible Web Services platform. Invented a patent-pending (applied) solution, and led the development as well as the initial sales and marketing efforts.

- This next-generation J2EE (HP/Bluestone app server) Web Services solution ties together the emerging Web Services standards, end-to-end transactions, and optimized mobile services & applications.
- Led and managed the entire lifecycle of the product from conception, architectural design, product development, QA, documentation, senior management approval, patent filing, preparation for marketing launch at JavaOne, as well as interfacing with early adopter customers and strategic partners.
- Managed relationships with multiple HP organizations and teams that contributed to the overall solution.
- Positioned the product, targeted key early adopters and partners, and leveraged my own contacts to build successful strategic relationships.
- Selected to provide support to HP/Bluestone's top sales manager, and helped land a strategic account in the Asia-Pac market.
- Selected as the representative for Hewlett Packard to the JSR 172 Expert Group that is defining the worldwide standard for J2ME mobile Web Services.

From: 1999
To: 2000
Organization: Satora Networks
Title: Founder & Chief Technology Officer
Summary: Founded Satora Networks to create wireless platforms and services for Internet devices based on the technologies invented by Dr. Chatterjee as part of his Ph.D. research at MIT Lab for Computer Science.

- Raised venture funding, recruited the management and core engineering teams, set corporate and product strategy, handled customer and partner relations, and

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managed overall corporate affairs.

- Architected and led the development of the StrongARM-based mobile hardware platform, Linux-based mobile OS, client-side services, and server-side J2EE environment.
- Landed key customer and partner wins, managed revenue and burn rate to become profitable early on, and oversaw the growth of the company.

From: 1995
To: 2001
Organization: MIT Lab for Computer Science
Title: Doctoral Researcher
Summary: Designed a modular system architecture that supports the cost-effective development of network devices and services. The system consists of Lego-like commodity hardware and standards-based software components that are quickly composed together through a development environment into optimized end-user devices as well as client-side services.

- Architected and implemented the entire system: a Linux-based client software environment, a wireless network and StrongARM processor-based device hardware platform, as well as a Web-based design and optimization environment and tool.
- Successfully mentored and managed a research group of 6 Masters and Bachelors students.
- The technology underlying Dr. Chatterjee's thesis was selected as one of the top inventions in thirty-five year history of MIT Laboratory for Computer Science.

From: 1997
To: 1999
Organization: FidelityCAPITAL (Boston, MA)
Title: Entrepreneur-In-Residence
Summary: Worked with Fidelity senior management and FidelityCAPITAL partners to source, analyze, and fund technology start-ups strategic to Fidelity interests.

- Evaluated business plans submitted to Fidelity for venture funding, and analyzed emerging market and technology trends to identify opportunities for internal spin-offs in the telecom and eBusiness spaces.
- Founded and served as President & CTO of a wireless devices and services company (Satora Networks) that was seed funded by Fidelity.

Litigation Support Experience

Expert Engagement:
Type of Matter: Enterprise Software Patent Infringement
Law Firm: Morrison & Foerster
Case Name: Software AG and Software AG v. BEA Systems
Services Provided: Retained as BEA's expert; submitted two expert reports; deposed twice; prepared for trial (exhibits, testimony, cross examination).

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Disposition:	Settled
Date:	2004

Expert Engagement:

Type of Matter:	Enterprise software intellectual property litigation.
Law Firm:	Morrison & Foerster
Case Name:	
Services Provided:	Consultant to attorney
Disposition:	Settled
Date:	2004-2005

Expert Engagement:

Type of Matter:	Mobile software intellectual property litigation.
Law Firm:	Perkins Coie
Case Name:	Esmertec v. Tao Group
Services Provided:	Retained as Esmertec's expert; submitted two expert reports.
Disposition:	Settled
Date:	2006

Expert Engagement:

Type of Matter:	Enterprise and mobile software intellectual property litigation.
Law Firm:	McDermott Will & Emery
Case Name:	Metrologic Instruments v. Symbol Technologies
Services Provided:	Retained as Metrologic's expert
Disposition:	Settled
Date:	2006-2007

Expert Engagement:

Type of Matter:	Distributed and mobile computing trade secret litigation.
Law Firm:	Haralson, Miller, Pitt, Feldman & McAnally
Case Name:	Modular Mining Systems (Komatsu Ltd.) v. Jigsaw Systems et al.
Services Provided:	Retained as Modular's expert; submitted two expert reports; deposed.
Disposition:	Summary judgment
Date:	2006-2008

Expert Engagement:

Type of Matter:	Distributed systems, mobile computing and object oriented programming intellectual property litigation.
Law Firm:	Kirkland & Ellis
Case Name:	
Services Provided:	Consultant to attorney
Disposition:	Settled
Date:	2007

Expert Engagement:

Type of Matter:	Communications software and systems intellectual property litigation.
Law Firm:	Carey Rodriguez Greenberg & Paul
Case Name:	Catch Curve v. Venali
Services Provided:	Retained as Venali's expert; submitted two expert reports

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Disposition:	Summary judgment
Date:	2008

Expert Engagement:

Type of Matter:	Distributed computing and network routing systems intellectual property litigation.
Law Firm:	Vinson & Elkins
Case Name:	WebXChange v. Dell
Services Provided:	Retained as Dell's expert
Disposition:	Summary judgment
Date:	2008-2010

Expert Engagement:

Type of Matter:	Communications systems intellectual property litigation.
Law Firm:	Kirkland & Ellis
Case Name:	Motorola, Inc. et al. v. Rembrandt Technologies, LP
Services Provided:	Retained as the plaintiffs' expert; submitted expert report
Disposition:	Settled
Date:	2009

Expert Engagement:

Type of Matter:	Database and object mapping intellectual property litigation.
Law Firm:	Kirkland & Ellis
Case Name:	DataTern v. United Airlines
Services Provided:	Retained as United Airlines' expert
Disposition:	Settled
Date:	2009

Expert Engagement:

Type of Matter:	Control systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	Finisar v. Source Photonics
Services Provided:	Retained as Finisar's expert; source code review
Disposition:	Settled
Date:	2010

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Agility IP
Case Name:	MShift v. Digital Insight
Services Provided:	Retained as MShift's expert; two expert reports;
Disposition:	Summary judgment
Date:	2010

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	OpenWave v. 724 Solutions
Services Provided:	Retained as OpenWave's expert; source code review

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Disposition:	Settled
Date:	2010

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Winston Strawn
Case Name:	Ganas v. Charles Schwab et al
Services Provided:	Retained as Charles Schwab's expert
Disposition:	Settled
Date:	2011

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Drinker Biddle
Case Name:	De Lage Landen Operational Services v. Third Pillar Systems
Services Provided:	Retained as Third Pillar's expert
Disposition:	Settled
Date:	2011

Expert Engagement:

Type of Matter:	Mobile systems trade secret misappropriation litigation.
Law Firm:	Berliner Cohen
Case Name:	Damodharan Ulagaratchalan v Dhyan Infotech
Services Provided:	Retained as Dhyan's expert; source code review
Disposition:	Settled
Date:	2011

Expert Engagement:

Type of Matter:	Control systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	Finisar v. Oplink
Services Provided:	Retained as Finisar's expert; source code review
Disposition:	Settled
Date:	2011

Expert Engagement:

Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Ropes & Gray
Case Name:	Motorola Mobility (Google) v. Microsoft
Services Provided:	Retained as Google's expert; source code review
Disposition:	Settled
Date:	2011-2012

Expert Engagement:

Type of Matter:	Wireless networking & management intellectual property litigation.
Law Firm:	Kirkland & Ellis
Case Name:	Netgear v. Ruckus Wireless
Services Provided:	Retained as Netgear's expert; source code review
Disposition:	Adjudicated

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Date:	2012-2013
Expert Engagement:	
Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	XpertUniverse v. Cisco Systems
Services Provided:	Retained as Cisco's expert; submitted expert report; source code review; deposition; trial
Disposition:	Adjudicated
Date:	2012-2013

Expert Engagement:	
Type of Matter:	Distributed computing systems contract litigation.
Law Firm:	Berliner Cohen
Case Name:	Skillnet Solutions v. Entertainment Publications
Services Provided:	Retained as Entertainment's expert
Disposition:	Dismissed
Date:	2013

Expert Engagement:	
Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Mayer Brown
Case Name:	Aeritas v. US Airways, Inc., Delta Airlines, Inc., Alaska Air Group
Services Provided:	Retained as the airlines' expert; submitted 3 expert reports; source code review; depositions
Disposition:	Settled
Date:	2013

Expert Engagement:	
Type of Matter:	Distributed systems intellectual property litigation.
Law Firm:	Ropes & Gray
Case Name:	Wellogix v. ADP et. al.
Services Provided:	Retained as ADP's expert
Disposition:	Stayed
Date:	2013

Expert Engagement:	
Type of Matter:	Trade secret misappropriation litigation.
Law Firm:	Hopkins & Carley
Case Name:	Bradford Technologies v. NCV Software et al.
Services Provided:	Retained as Bradford's expert; submitted expert report; mediation
Disposition:	Settled
Date:	2013

Expert Engagement:	
Type of Matter:	Mobile systems intellectual property litigation.
Law Firm:	Fish & Richardson P.C.
Case Name:	Ericsson Inc. v. Samsung Electronics Co., Ltd. et al.
Services Provided:	Retained as Samsung's expert; source code review
Disposition:	Settled

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Date:	2013
Expert Engagement:	
Type of Matter:	Contract dispute litigation.
Law Firm:	Morgan Lewis & Bockius
Case Name:	AMC Technologies v. Cisco Systems
Services Provided:	Retained as Cisco's expert; submitted expert report; deposition
Disposition:	Settled
Date:	2013

Expert Engagement:	
Type of Matter:	Trade secret misappropriation litigation.
Law Firm:	Lexanalytica
Case Name:	PQ Labs v. Qi et. al.
Services Provided:	Retained as defendants' expert; source code review; deposition
Disposition:	Adjudicated
Date:	2013

Expert Engagement:	
Type of Matter:	Distributed systems and security intellectual property litigation.
Law Firm:	Troutman Sanders
Case Name:	Media Rights Technologies, Inc. v. Capital One Financial Corporation
Services Provided:	Retained as Capital One's expert; source code review; expert reports; declaration
Disposition:	Adjudicated
Date:	2013

Expert Engagement:	
Type of Matter:	Distributed computing intellectual property litigation.
Law Firm:	Rothwell, Figg, Ernst & Manbeck, P.C.
Case Name:	SecureBuy v. CardinalCommerce
Services Provided:	Retained as SecureBuy's expert; *inter partes* review; declarations
Disposition:	Settled
Date:	2013

Expert Engagement:	
Type of Matter:	Distributed computing intellectual property litigation.
Law Firm:	Mayer Brown LLP
Case Name:	American Airlines , Inc. et al. v. Loyalty Conversion Systems Corporation
Services Provided:	Retained as the airlines' expert; covered business method petitions; declarations
Disposition:	Adjudicated
Date:	2014

Expert Engagement:	
Type of Matter:	Mobile computing and security intellectual property litigation.
Law Firm:	Dickstein Shapiro, LLP
Case Name:	Tierra Intellectual Borinquen, Inc. v. Toshiba Corporation et. al.
Services Provided:	Retained as Toshiba's expert; declaration; expert report
Disposition:	Settled

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Date:	2014
Expert Engagement:	
Type of Matter:	Distributed computing systems and software intellectual property litigation.
Law Firm:	Reed Smith, LLP
Case Name:	Kroy IP Holdings, LLC v. Safeway, Inc. and The Kroger Co.
Services Provided:	Retained as the defendants' expert; expert report
Disposition:	
Date:	2014

Expert Engagement:	
Type of Matter:	Secure mobile computer hardware and software intellectual property litigation.
Law Firm:	White & Case LLP
Case Name:	Maxim Integrated Products, Inc. v. JPMorgan Chase & Co.
Services Provided:	Retained as JPMorgan Chase's expert; 3 expert reports
Disposition:	Settled
Date:	2014

Expert Engagement:	
Type of Matter:	Computer hardware and software antitrust litigation.
Law Firm:	Morgan Lewis & Bockius LLP
Case Name:	In Re: Keurig Green Mountain Single Serve Coffee Antitrust Litigation.
Services Provided:	Retained as plaintiffs' expert; declarations
Disposition:	
Date:	2014

Expert Engagement:	
Type of Matter:	Mobile computer and location-based systems intellectual property litigation.
Law Firm:	Morgan Lewis & Bockius LLP
Case Name:	Unwired Planet LLC v. Square, Inc.
Services Provided:	Retained as plaintiffs' expert; source code review; declarations
Disposition:	
Date:	2014

Expert Engagement:	
Type of Matter:	Distributed computing systems intellectual property litigation.
Law Firm:	Morrison & Foerster LLP
Case Name:	AirWatch LLC v. Good Technology Corporation et al.
Services Provided:	Retained as plaintiff's expert; declaration
Disposition:	
Date:	2014

Expert Engagement:	
Type of Matter:	Mobile computer and location-based systems intellectual property litigation.
Law Firm:	Goodwin Procter LLP
Case Name:	Unwired Planet LLC v. Square, Inc.
Services Provided:	Retained as plaintiff/patent owner's expert; source code review; covered business methods review; *inter partes* review; declarations; deposition
Disposition:	
Date:	2015

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Expert Engagement:
Type of Matter: Distributed computing systems intellectual property litigation.
Law Firm: Morrison & Foerster LLP
Case Name: Good Technology Corporation et al. v. AirWatch LLC
Services Provided: Retained as defendant's expert; *inter partes* review; declaration
Disposition:
Date: 2015

Expert Engagement:
Type of Matter: Mobile computer and location-based systems intellectual property litigation.
Law Firm: Schwegman Lundberg & Woessner
Case Name: Square, Inc. v. Unwired Planet LLC
Services Provided: Retained as patent owner's expert; covered business methods review; declaration
Disposition:
Date: 2015

Expert Engagement:
Type of Matter: Mobile computer and location-based systems intellectual property litigation.
Law Firm: EIP
Case Name: Square, Inc. v. Unwired Planet LLC
Services Provided: Retained as patent owner's expert; *inter partes* review; declaration
Disposition:
Date: 2015

Expert Engagement:
Type of Matter: Software systems intellectual property litigation.
Law Firm: Mayer Brown LLP
Case Name: American Express Company et al. v. Signature Systems, LLC
Services Provided: Retained as petitioner's expert; covered business methods review; declaration
Disposition:
Date: 2015

Expert Engagement:
Type of Matter: Software and backup systems intellectual property litigation.
Law Firm: Morrison & Foerster LLP
Case Name: Farstone Technology, Inc. v. Apple, Inc.
Services Provided: Retained as Apple's expert; source code review; expert reports (2); declarations; deposition
Disposition:
Date: 2015

Expert Engagement:
Type of Matter: Distributed computing systems intellectual property litigation.
Law Firm: Baker Botts LLP
Case Name: MobileIron, Inc. v. Good Technology Corporation
Services Provided: Retained as petitioner's expert; *inter partes* review; declaration
Disposition:

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Date:	2015
Expert Engagement:	
Type of Matter:	Data management intellectual property litigation.
Law Firm:	Mayer Brown
Case Name:	Olivistar v. Regions Bank et al.
Services Provided:	Retained as defendant's expert; declaration
Disposition:	
Date:	2015

Expert Engagement:	
Type of Matter:	Cloud computing and data migration intellectual property litigation.
Law Firm:	Ropes & Gray
Case Name:	BitTitan v. SkyKick
Services Provided:	Retained as defendant's expert; declarations; deposition
Disposition:	Settled
Date:	2015

Expert Engagement:	
Type of Matter:	Breach of contract, fraud litigation involving large scale enterprise software.
Law Firm:	Orrick
Case Name:	State of Oregon v. Oracle et al.
Services Provided:	Retained as defendants' expert
Disposition:	Settled
Date:	2016

Expert Engagement:	
Type of Matter:	Document processing intellectual property litigation.
Law Firm:	Mayer Brown
Case Name:	Capital Security Systems v. NCR et al.
Services Provided:	Retained as defendants' expert; expert report
Disposition:	
Date:	2016

Expert Engagement:	
Type of Matter:	Web page intellectual property litigation.
Law Firm:	Cooley
Case Name:	Tele-Publishing, Inc. v. Facebook et al.
Services Provided:	Retained as Facebook's expert; expert report; declarations; deposition
Disposition:	
Date:	2016

Expert Engagement:	
Type of Matter:	Intellectual property litigation.
Law Firm:	Cooley
Case Name:	Sound View Innovations, LLC v. Facebook, Inc.
Services Provided:	Retained as Facebook's expert; *inter partes* review; declarations
Disposition:	
Date:	2017

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Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Cooley
Case Name: Zkey Investments, LLC v. Facebook, Inc.
Services Provided: Retained as Facebook's expert; *inter partes* review; declaration
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Young Basile
Case Name: Mantissa Corp. v. Ondot Systems, Inc. et al
Services Provided: Retained as plaintiff's expert; declaration
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Cooley
Case Name: Vaporstream, Inc. v. Snap, Inc.
Services Provided: Retained as Snap's expert; *inter partes* review; declarations
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Baker Botts
Case Name: Symantec Corporation v. Zscaler, Inc.
Services Provided: Retained as Symantec's expert; *inter partes* reviews; declarations
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Klarquist
Case Name: American Express Company et al. v. Signature Systems, LLC
Services Provided: Retained as Petitioner's expert; covered business method petition; declaration
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Miller Law
Case Name: Apogee Telecom, Inc. v. Brian Rosenblatt
Services Provided: Retained as Defendant's expert
Disposition:
Date: 2017

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Expert Engagement:
Type of Matter: Intellectual property arbitration.
Law Firm: Morgan Lewis & Bockius
Case Name: Trupanion, Inc. v. Veterinary Data Services, Inc.
Services Provided: Retained as Defendant's expert
Disposition:
Date: 2017

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Goodwin
Case Name: Leftsnrights, Inc. v. 33Across, Inc.
Services Provided: Retained as Defendant's expert; *inter partes* review; declaration
Disposition:
Date: 2018

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Cooley
Case Name: Ameranth, Inc. v. Mobo Systems, Inc. (Olo)
Services Provided: Retained as Defendant's expert; expert reports
Disposition:
Date: 2018

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Cooley
Case Name: Facebook, Inc. and Instagram, LLC v. Search and Social Media Partners, LLC
Services Provided: Retained as Facebook's expert; *inter partes* review; declarations
Disposition:
Date: 2018

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Cooley
Case Name: Facebook, Inc. v. Hyper Search LLC
Services Provided: Retained as Facebook's expert; *inter partes* review; declaration
Disposition:
Date: 2018

Expert Engagement:
Type of Matter: Intellectual property litigation.
Law Firm: Goodwin
Case Name: Touchstream Technologies, Inc. v. Vizbee, Inc.
Services Provided: Retained as Vizbee's expert; expert report; source code analysis
Disposition:
Date: 2018

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Non-Litigation Consulting Projects

Consulting Engagement:

Type of Matter:	Enterprise software architecture and development
Client:	Sevak Solutions, Inc.
Services Provided:	Architect, specify, and develop enterprise-class software for secure financial transactioning in multiple markets and countries around the world
Date:	2005-2006

Consulting Engagement:

Type of Matter:	Enterprise software architecture and development
Client:	United States Agency for International Development (USAID)
Services Provided:	Specify and develop financial transactioning and tracking software
Date:	2004-2005

Consulting Engagement:

Type of Matter:	Training services
Client:	South Korean Ministry of Information and Communications
Services Provided:	Conducted a workshop to train selected university professors and corporate researchers on properly using mobile and distributed technology for strategic and financial growth.
Date:	2004

Consulting Engagement:

Type of Matter:	Product and service strategy and development
Client:	Hewlett-Packard Company
Services Provided:	Analyze market opportunities for new, market-specific technology product and service offerings
Date:	2004

Consulting Engagement:

Type of Matter:	Mobile enterprise software
Client:	ACCION International
Services Provided:	Specified, architected, and developed a mobile enterprise software system for optimizing wireless transactioning.
Date:	2003

Consulting Engagement:

Type of Matter:	Market, technology and services strategy development
Client:	Hewlett-Packard Laboratories
Services Provided:	Analyzed multiple country-specific market needs and opportunities, and proposed technology and service offerings
Date:	2003

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Publications

1. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Pearson Education Korea Ltd. and Hong Reung Science Pub. Co. 2005), Korean Trans.
2. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Prentice Hall 2004).
3. Chatterjee, Sandeep and Webber, James, Developing Enterprise Web Services: An Architect's Guide (Pearson Education Singapore Pvt. Ltd. 2004), Indian Reprint.
4. Chatterjee, Sandeep, "Enterprise Technology: Web Services: The Next Revolution in IT," in *Dataquest* (March 2004).
5. Chatterjee, Sandeep, "Enterprise 2004 Trends: On A Cautious Note," *Dataquest* (Feb. 2004).
6. Chatterjee, Sandeep, "A Real-World Web Services-Based Application," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/realWorld3_1.html).
7. Chatterjee, Sandeep, "Write Once, Run Anywhere Web Services," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/realWorld2_1.html).
8. Chatterjee, Sandeep, "Developing Real World Web Services-Based Applications," *JavaBoutique* (http://javaboutique.internet.com/articles/WSApplications/).
9. Chatterjee, Sandeep, Doctoral Thesis Dissertation, "Composable System Resources As An Architecture For Networked Systems," Massachusetts Institute of Technology (2001).
10. Keckler, Stephen W., Chang, Andrew, Lee, Whay Sing, Chatterjee, Sandeep, and Dally, William J., "Concurrent Event Handling Through Multithreading," *IEEE Trans. Computers* 48(9), pages 903-916 (1999).
11. Chatterjee, Sandeep and Devadas, Srinivas, "MASC Composable Computing Infrastructure For Intelligent Environments," *Proceedings of the Industrial Electronics Conference*, pages 132-138 (1999).
12. Chatterjee, Sandeep, "SANI: A Seamless and Non-Intrusive Framework and Agent for Creating Intelligent Interactive Homes," *Second International Conference on Autonomous Agents*, pages 436-440 (1998).
13. Chatterjee, Sandeep, "Towards A MASC Appliances-Based Educational Paradigm," *ACM Symposium on Applied Computing*, pages 112-116 (1998).
14. Chatterjee, Sandeep, "Towards Rapidly Deployable Intelligent Environments," *American Association for Artificial Intelligence Symposium on Intelligent Environments*, pages 31-36 (1998).
15. Chatterjee, Sandeep, "The ModuleC Network Architecture: A Novel Approach Of Computing Through Information Appliances," *IEEE International Symposium on Consumer Electronics* (1997).
16. Chatterjee, Sandeep, Masters Thesis, "Asynchronous Event Handling," Massachusetts Institute of Technology Technical Report (May 1997).
17. Tennenhouse, David L. and Chatterjee, Sandeep, "The First 10 Feet: The Missing Story For Encouraging User Investment In Universal Broadband Connectivity" (October 1996).

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18. Chatterjee, Sandeep and Faraboschi, Paolo, "The VLIW Trace Scheduling Compiler Visual Analysis System," Hewlett-Packard Laboratories Internal Technical Report (September 1995).

19. Chatterjee, Sandeep and Donohue, Richard J., "Electron Gamma Shower Windows 2," *International Conference on Monte Carlo Simulations in Nuclear & High Energy Physics* (February 1993).